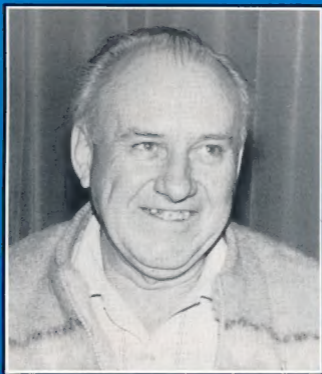


Amateur Radio



JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA
VOL. 33, No. 8, AUGUST 1987



**HAPPY BIRTHDAY INTRUDER WATCH
USSR CALL SIGNS
TRIBUTE TO VK3RJ
VHF/UHF BUILDING BLOCKS
2-METRE METEOR SCATTER
TREASURER'S REPORT**

DICK SMITH ELECTRONICS

PTY LTD

Who gives the best price on
Amateur gear? — DSE of course!

**DICK SMITH
ELECTRONICS**

PTY LTD

• NSW • Albany 21 8390 • Bankstown Square 707 4088 • Blacktown 671 7722 • Baulkham Hills 946 7744 • Bond Junction 387 1444 • Broadmeadow 888 0441 • Campbelltown 27 2190 • Chateau Chase 477 1955
• Chulons 642 8922 • Gore Hill 439 5211 • Gosford 25 0225 • Harebly 477 0633 • L. Verdon 800 9889 • Maitland 33 7066 • Miranda 525 2722 • Newcastle 61 1896 • North Ryde 80 3555 • Parramatta 889 2188 • Penrith 32 7400
• Ransay Square 211 2777 • Sydney City 267 9111 • Tamworth 66 1711 • Wollongong 20 3800 • ACT • Fyshwick 80 4944 • VIC • Barossa 37 5432 • Berango 43 0368 • Box Hill 890 0608 • East Brighton 592 2366 • Geelong 383 4455 • Essendon 379 7444 • Frankston 783 9144 • Geelong 43 8522 • Melbourne City 67 0634 • Richmond 428 1614 • Ringwood 879 5330 • Springvale 547 0522 • QLD • Brisbane City 229 9277 • Bundamba 361 8233
• Cremorne 359 6255 • Redbank 288 5509 • Rockhampton 27 0644 • Southport 32 9883 • Townsville 38 4300
• Townsville 72 5722 • Underwood 341 0844 • SA • Adelaide City 232 1200 • Darwin 298 8977 • Enfield 260 6086 • Salisbury 281 5583 • WA • Cannington 431 0868 • Fremantle 325 9722 • North Perth 326 6344 • Perth City 491 3261 • TAS • Hobart 31 0800 • NT • Stuart Park 81 1877

Amateur Radio



Special Features

Amateur Radio in an Emergency Situation — 1929 by Maurie Milani VK3CWB	30
Army Wireless Sets of WWII by Jim Payne VK3AZT	24
Devolution of Examinations Submission from the WIA	28
Future of Amateur Radio Ron Henderson VK1RH	39
Happy Birthday Intruder Watch by Bill Martin VK2COP	36
Morseword 5 by Audrey Ryan	49
Not a Rescue, but... by Harry Atkinson VK6WZ	27
Treasurer's Report — 1986	3
USSR Call Signs by Jack Wichels W7YF	19
Visit to China by Wally Watkins VK4DO	38
Wireless Video Transmitter Standard	37

Technical Features

Aerials — Some practical aspects Self-Supporting Masts and Towers by Ted Roberts VK4QI	16
Building Blocks Revisited — Part 4 by Harold Hepburn VK3AFQ	12
Parasitic Beam Program for the Microbee by Karl Saville VK5AHK	26
Repeater Reverse for the Yaesu FT-730R by David Horsfall VK2KFU	11
Two Metre Meteor Scatter by Doug McArthur VK3UM	6
VHF-UHF Building Blocks Revisited — Part 1 by John Day VK3ZJF	5
What is this thing called AMTOR? by S E Molen VK2SG	25

FRONT COVER: This year the Intruder Watch service enters its 21st year. Henry Andersson VK8HA, has been a stalwart supporter of the IW since 1975.



Regular Features

Advertisers' Index	64
ALARA	55
AMSAT Australia	54
AR Showcase	
— EMI Filters	58
— Halcyon Days	58
— Icom IC-275A	58
— Test Rig for Cellular Mobile Telephone	58
Installers	58
Awards	
— ROARS 15th Anniversary	47
Club Corner	58
Contests	
— Contest Disqualification Criteria	46
— VKZLO DX Contest, 1987 Rules	47
— YL/OM Summer SSB Sprint	46
— 11th WA Annual 3.5 MHz CW & SSB	46

Editor's Comment — Where does the money go?	2
Education Notes	53
Electro-Magnetic Compatibility Report — RFI in Great Britain — Where do we stand (in DJ)?	50
Five-Eighth Wave	59
Hamads	64
Intruder Watch	49
Ionospheric Predictions	63
Know your Secondhand Equipment	49
Magazine Review	40
Obituaries — Vern Everitt, Raymond Jones & Campbell Patterson	62
Over to you! — members have their say	60
Pounding Brass	51
QSP	2, 24, 27, 34, 38, 49, 61, 62
Silent Keys — VK2EK, VK3AZN	62

Solar Geophysical Summary	63
Spotlight on SWLing	53
Technical Mailbox	48
VHF UHF — an expanding world	42
VK2 Mini-Bulletin	59
VK3 WIA Notes	58
WICEN News — Bungonia (NSW) Rescue 87	34

DEADLINE

All copy for inclusion in the October 1987 issue of Amateur Radio, including regular columns and Hamads, must arrive at PO Box 300, Caulfield South, Vic. 3162, at the latest, by 9 am, August 20, 1987.

Amateur Radio

Published monthly as the Official Journal by the Wireless Institute of Australia, founded 1910. ISSN 0002-2666. Registered Office: 3160 Hawthorn Road, Caulfield North, Vic. 3161. Telephone: (03) 528 5992.

EDITOR VK3ABP

TECHNICAL EDITORS
PETER GAMBLE* VK3YRP
PETER GIBSON* VK3AZL
EVAN JARMAN* VK3AKI
DOUG MCARTHUR* VK3JUM
GIL SONES* VK3AJI

CONTRIBUTING EDITORS
Brenda Edmonds VK3KT
Ron Fisher VK3DM
Orbert Griffith VK3CO
Ken Hall VK3AKH
Roy Harrop VK3AOH
Robin Harwood VK3RH
Ron Henderson VK3RH
Ian Hunt VK3SQ
Colin Hurst VK3H
Eric Jamieson VK3LP
Bill Martin VK3COP
Len Poynter VK3BYE
Hans Ruckert VK2AO

DRAFTING
George Brooks
Liz Kline

MANAGER
(Mrs) Ann McCurdy

***Members of Publications Committee**
Inquiries and material to:
The Editor
PO Box 300,
Caulfield South, Vic. 3162

Material should be sent direct to PO Box 300, Caulfield South, Vic. 3162, by the 20th day of the second month preceding publication. Note: Some months are a few days earlier due to the way the days fall. Check page 1 for deadline dates. Phone: (03) 528 5992.

HAMADS should be sent direct to the same address, by the same date.

Acknowledgment may not be made unless specifically requested. All important items should be sent by Certified Mail. The Editor reserves the right to edit all material, including letters to the Editor and Hamads, and reserves the right to refuse acceptance of any material, without specifying a reason.

TRADE PRACTICES ACT
It is impossible for us to ensure the advertisements submitted for publication comply with the Trade Practices Act 1974. Therefore advertisers and advertising agents will appreciate the absolute need for themselves to ensure that the provisions of the Act are complied with strictly.

VICTORIAN CONSUMER AFFAIRS ACT
All advertisers are advised that advertisements containing only a PO Box number as the address cannot be accepted without the addition of the business address of the advertiser or seller of the goods.

Production: BETKEN PRODUCTIONS
6 Masfield Avenue, Mooroolbark, Vic. 3168
FAX: (03) 726 7059

Laser Scanned Colour Separations by:
QUADRICOLOR INTERNATIONAL (AUSTRALIA) PTY LTD
3 Lake Drive, Dingley, Vic. 3172
Tel: (03) 551 3333

Typesetting by: BETKEN PRODUCTIONS
5 Masfield Avenue, Mooroolbark, Vic. 3168

Make up and Photo Reproduction by: EASTERN ADVERTISING PTY LTD
PO Box 558, Lytton, Vic. 3140
Tel: (03) 735 6410

Photographic Film and Processing Material courtesy:
AGFA-GEVAERT LTD AUSTRALIA

Printed by: LEADER WESTERNPRINT PRINTING PTY LTD
1 University Place, Clayton North, Vic. 3168
Tel: (03) 560 5111

Mail Processing by: AUTOMAIL PTY LTD
14 Stamford Road, Oakleigh East, Vic. 3166
Tel: (03) 566 6077



Editor's Comment

WHERE DOES THE MONEY GO?

From time to time we are asked to publish the amounts of the various Divisional subscriptions. This is a subject about which some Divisions seem a little reticent, as indicated by the success (four votes to three) at the 1985 Federal Convention of a motion to prohibit publishing by any WIA publication of a comparative table of all States subscriptions. These very considerably between States. It seemed a good idea to explain not only why so, but also how the funds are spent.

Basically, the reason for the differences is that some Divisions provide more services to their members than do others. All have to support, equally, the Federal body by an amount of \$27 per member this year. So, adding to this enough to cover their own expenses, we find the Divisions asking from each full member a maximum (in VK3) of \$44 and a minimum (in VK4) of \$33. All amounts mentioned from here on are per member in 1987.

Federally, the biggest single cost is the publishing of AR (\$16.25). Our IARU subscription costs 75 cents. Everything else totals \$10.00, including salaries of office manager and staff. What do they do? Mainly, they look after the impressive volume of Executive and administrative correspondence to and from DCC, the Divisions, commercial suppliers, advertisers and members. They order and sell books (Magbooks). Inevitably, they receive and make many telephone calls. The cost of lighting, power, postage and the telephone service is substantial. More time goes into the continuing task of updating membership data and other information, for which each staff member has their own terminal into the office computer.

One significant area of Federal expense is the annual Federal Convention, (\$1.60). Executive is keenly aware, as are all the Federal Councilors, that some reduction here would be welcome, if it did not imply a corresponding reduction in the Institute's administrative coherence. Even in these days of sophisticated communication

systems using broadband interstate links there still seems no substitute for meeting face-to-face around the convention table. But it is noteworthy that VK4, because of the expense, did not hold a Clubs' Conference this year. Some VK4's may claim, as a result, that their representatives at the Federal Convention were less well-briefed than they might have been. The result of a similar Federal cancellation would, I suspect, be much more serious.

And what does your Division do with its share? This varies greatly from State to State. VK3 for example (on \$17 a head) has until very recently supported virtually all the State's 2-metre and 70-centimetre repeaters. Its outwards QSL bureau is free. It owns its own meeting room and office premises (as does VK2) and all the equipment used for the Sunday morning news broadcast, plus a considerable amount of WICEN equipment. VK4, on the other hand, with only \$5 per year, owns no real-estate and depends on privately-owned equipment for its broadcast arrangements.

Some people might argue, in spite of these divergences, that the range of services to members does not vary commensurately. Obviously VK4 depends much more on Club and volunteer support than does VK3. But VK3, more than any other State, has its available pool of volunteers diminished by the Federal need for people. Some hold both Federal and Divisional office, but generally this is impractical.

As you see, we have in the WIA a complex organisation with many interstate differences, perhaps tending to reflect the Australian political scene and suffer from the same problems. Do we need State Governments? Do we need State Divisions? Should the Federal body have more influence? Or less? There are no simple answers, but one thing is certain. We can only have what we are willing to pay for.

Bill Rice VK3ABP Editor

Inserts for Amateur Radio

Many Divisions, Zones or Clubs make regular use, as a newsletter distribution facility, or to notify members of coming events, of the system whereby copies of AR can carry inserts, usually just for one State. This facility is provided by the mailing service organisation (Automail Pty Ltd) and the WIA Federal Office at a nominal cost.

In order to comply with postal regulations and WIA policy, it is necessary that all inserts should meet certain specifications. Some of these appear not to be very widely known, and this QSP has been put together to spread the information.

Sizes must be as follows:

Unfolded — Minimum 75 x 130 mm ...
Maximum 192 x 250 mm
Folded — Minimum as above ... Maximum 177 x 240 mm

The paper used should be bond, minimum 80 gsm, maximum 100 gsm.

Each Club submitting an insert must have it approved by their Division, then send a proof copy to the Editor for checking at least 14 days before the due date at Automail (see list below). The proof copy must be addressed via the Federal Office (PO Box 300, Caulfield

South, Vic. 3162) to ensure that the relevant account entries are made and Automail notified.

All inserts must carry the wording "Insert into Amateur Radio (month) (year)". This is required by Australia Post regulations.

When approved, bulk inserts must then be sent to Automail Pty Ltd, 14-16 Stamford Road, Oakleigh East, Vic. 3166. Under no circumstances are Automail to be contacted directly by Clubs or Divisions, as all requests for inserts, bookings, etc, must be via the Federal Office.

Due dates for delivery to Automail for the remainder of 1987 are

September 1987	by August 20
October	by September 23
November	by October 21
December	by November 22
January 1988	by December 10

Neither the Federal Office nor Automail necessarily accept any responsibility for omission or incorrect insertion of inserts. Surplus inserts are returned to the office. If requested, they will be returned to the originators at the latter's expense, and otherwise destroyed.

TREASURER'S REPORT

Following the Federal Convention in May, I am pleased to place before you pertinent figures relating to year ended December 31, 1986, which have been audited by our Accountants, Touche Ross and Co.

The main highlights were:

CATEGORY	BUDGET	ACTUAL
TOTAL INCOME	+ \$230 000	+ \$234 000
TOTAL OFFICE EXPENDITURE	— \$130 000	— \$121 000
TOTAL AMATEUR RADIO MAGAZINE	— \$100 000	— \$111 000

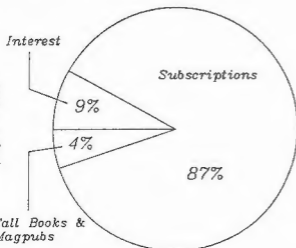
We had a surplus in 1986 amounting to approximately \$2000, and in 1985 a loss of approximately \$1000. We are satisfied with the final outcome for 1986.

Abridged Balance Sheet as at December 31, 1986

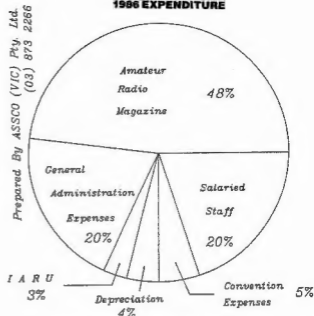
Current Assets	\$191 000	Deposits \$165 000, Trade Debtors \$10 000, remainder spread
Fixed Assets	\$ 25 000	Office equipment, furniture (valued at \$53 000 in 1983, but since depreciated by \$28 000 eg computer)
	<u>\$216 000</u>	
Current Liabilities	\$142 000	Subscriptions in Advance \$107 000, Amounts payable to Divisions \$22 000, Trade Creditors \$5 000, remainder spread
	<u>\$ 74 000</u>	
Members' Funds	\$ 74 000	
Working Capital	\$191 000	
Current Assets less Current Liabilities	<u>\$ 49 000</u>	

This amount is the cash resource held to meet our future commitments

1986 INCOME



1986 EXPENDITURE



We perceive however, that looking in to year 1987, there are some ominous signs emerging in figures relating to income and expenditure. They require immediate attention which will affect all of us as members of the WIA in terms of a drop in standard in some of the services offered. If these steps are not implemented now to cut expenditure and increase income, we have calculated a deficiency of \$30 000 in 1987 and possibly a similar result in 1988. We do not have the financial resources to meet such an eventuality and steps are being taken now to get our finances in order for 1987 with a view to going into 1988 with hopefully a balanced budget being achieved as at 31/12/88. In 1987 we expect a loss of around \$16/20 000 with the above measures being put into place. With time against us it may be difficult to achieve a better result.

The reasons for these problems emerging are:

- 1 Membership is dropping with less income anticipated.
- 2 Advertising has decreased significantly and in money terms could reduce by 25 percent. One of the reasons for this decrease is cost of amateur equipment caused by the devaluation of the Australian Dollar against the Japanese Yen. Approximately 18 months ago \$A1 could buy say 200 Yen, today it is about 100. Consequently amateurs are not buying the equipment they were in the past, and therefore advertisers are cutting back on their advertising budgets.
- 3 Cost of insurance, eg Workcare, wages, high interest rates, fringe benefits tax and other increased costs caused by inflation at around nine percent are effectively passed on to us and have to be absorbed into our finances. These costs are passed on to us by the companies with whom we deal.
- 4 We use a considerable quantity of paper, eg Amateur Radio Magazine, photocopying, etc. Cost of paper has risen by 20 to 30 percent and is affecting our finances considerably.

At the May Convention it was recommended by the Financial Subcommittee that the Federal Element of the subscription be increased from \$27 to \$30 for 1988. This increase should cover the inflation rate but is not nearly enough to meet all increased costs. That is why we must also cut out expenditure and try to increase our income to keep our "finance house" in order for the future.

We expect the next 12 to 24 months to be tough and your support and understanding of the foregoing situation will be appreciated.

Should members require the detailed audited Financial Statements of foregoing figures for 1986 including my Report tabled at the Convention, please write to the Federal Office.

73 Ross Burstall VK3CRB
HONORARY FEDERAL TREASURER

KENWOOD

price setter in the amateur radio

TR-751A
2-m ALL MODE TRANSCEIVER

TR-751A 2 METERS
TR-851A 70CM

The new TR-751A all-mode, 2-m transceiver delivers superior performance and "AB Mode Mobility". Packed with all of the most often needed features including auto-mode selection, dual digital VFOs, 10 memory plus tone, various scan functions, all-mode CTCSS, noise blanker, RTT, DCL (Digital Lock) and easy-to-operate front panel layout. And, designed with the latest state-of-the-art technology, this compact rig is the one to choose for VHF.



**NEW
RELEASE**

SUPER COMPACT MOBILE
TM-221A 2 METERS
TM-421A 70 CM



KENWOOD ELECTRONICS AUSTRALIA PTY. LTD.
4E WOODCOCK PLACE, LANE COVE, SYDNEY, N.S.W. 2066. Ph. (02) 428 1455.

Further, beware of dealers not listed in this advertisement who are selling Kenwood communications equipment. All Kenwood products offered by them are not supplied by Kenwood Electronics Australia Pty. Ltd. and have no guarantee applicable.

YOUR DEALER BELOW WILL GUARANTEE SATISFACTION

N.S.W.: ELECTRONICS — 84 VENTNORTH AVENUE, SYDNEY (02) 211 0908
REG STOCKMAN COMMUNICATIONS — Cnr BANCROFT ROAD & SHIPLEY STREET, BUNNELL (06) 72 1302
WORMALL COMMUNICATIONS — 51 DENISON STREET, HAMILTON, NEWCASTLE (049) 69 1999
MAGNETIC PTY. LTD. — 39 KERRY STREET, MULLINGBONG (042) 25 1405
E & K COMMUNICATIONS — 14 OUTRIM STREET, DICKSON, A.C.T. (062) 49 8437
CX ENGINEERING — 158 GRANITE STREET, PORT MACQUARIE (085) 84 5922
FRANK BOUNDY — LIDGROVE (085) 96 2745

INTERSTATE
VIC.

PARAMETERS PTY. LTD. — 1064 CENTRE ROAD, SOUTH DARLING (02) 575 0222
ELECTRONICS — SHOP 5 TO 7, 788-794 QUEEN STREET, MELBOURNE (03) 67 8861
BRIAN STANES — 11 MAUGHAM STREET, BALLARAT (053) 39 2888
SUMNER ELECTRONICS — 78 KING STREET, MENDO (054) 42 1877
HOBBY ELECTRONICS — 477 NELSON ROAD, Mt. NELSON (022) 23 6751
WARRONGS WIRELESS — 72 BRISBANE STREET, HOBART (002) 24 4202
ANDRE & COMMUNICATIONS — 18 CHURCH STREET, LANCASTON (082) 31 2711
V.K. ELECTRONICS — 214 MOUNT STREET, BUNNIE (034) 31 7723
MITCHELL RADIO CO. — 59 ALBION ROAD, ALBION (051) 371 5830
ELECTRONICS — 418 LOGAN ROAD, STONES CREEK, BRISBANE (07) 284 2565
INTERSTATE COMMUNICATIONS SYSTEMS PTY. LTD. — 8 WILE STREET, PORT ADELAIDE (08) 47 3608
WILGUS ELECTRONICS — 195 ALBANY HIGHWAY, VICTORIA PARK (08) 470 1118
RAY RADIO — 22 GRAZIE STREET, FERNHILL (06) 651 2561
FORD ELECTRONICS — 209 HANCOCK STREET, DOUBLE VIEW (09) 448 4746

S.A. & W.T.
W.A.

VHF-UHF BUILDING BLOCKS

Part 1

John Day VK3ZJF

57 Old Warrandyte Road, Donvale, Vic. 3111

This article is the first of a new series of designs for home-brewed amateur equipment for the VHF and UHF bands. During the design phase, the writer has consulted closely with Harold VK3AFQ, to ensure these efforts will be as compatible as possible.

With the increasing prices for commercial amateur equipment in recent times there has been a marked increase in home-brewing. It became obvious that if I wanted good equipment at a reasonable price I would have to build it myself. What began as a simple exercise to build a new six-metre transceiver has, through the interest of others, turned into a major design and construction project absorbing 18 months of spare time and appears set to continue for some time to come.

First, let us lay down some of the ground rules, then we shall look at what is in store for constructors.

DESIGN RULES

At the outset, several major guidelines had to be decided upon and adhered to throughout the project.

- 1 The mechanical size of the boards is 6 x 1.5 inches (150 x 38 mm) compatible with the VK3AFQ building block format.
- 2 The power supply for all modules operating at outputs of +7 dBw (five watts) or less should be 12 volts \pm 10 percent. For modules operating at outputs in excess of this the power supply should be 28-30 volts, moderately regulated.
- 3 Any RF signal entering or leaving a module should do so at 50 ohms.
- 4 State of the art components and techniques should be used where possible, dependent on local availability.

Throughout this series power levels will be quoted in dBm (dB above 1 milliwatt into 50 ohms), dBW (dB above 1 watt into 50 ohms) and relative levels in dBc (dB relative to desired carrier).

Whilst it may seem unusual to mention impedance levels for external connections, if the modules are to be generally and easily applicable in a variety of situations this is desirable.

The use of state-of-the-art components and techniques poses a series of interesting problems. In this series, the latest technology readily available in this country, has been used. The availability of components has been thoroughly investigated and where necessary, sources will be identified.

THE MODULES

Detailed circuits and discussion relating to each of the modules will be given as this series progresses. The brief description, features and

some possible applications of the modules are printed hereunder for your interest.

MODULE A — TWO-METRE 100 mW TRANSMITTER

This module consists of three 6 x 1.5 inch (150 x 38 mm) boards, incorporating the injection oscillator chain, the receive converter and the transmit converter.

The receive converter uses a BF981 dual gate MosFET preamplifier for low noise, followed by a diode double balanced mixer. Broadband termination for the mixer is provided by a grounded gate JFET stage with a 50 ohm input impedance, a tuned circuit in the drain provides some IF selectivity. An IF change-over relay is provided on this board.

On the transmit converter board, provision is made for an IF attenuator capable of handling up to five-watts. Following this, another diode double balanced mixer is used followed by a narrow tuned circuit filter and a two stage amplifier using a BF981 and a BFR96S high gain bi-polar transistor.

The injection module consists of a third overtone crystal oscillator, a diode frequency doubler and an amplifier to generate the required levels of mixer injection. This module can be used over a wide frequency range for a variety of applications.

As a bonus, this module will be described for 50-54 MHz as well as 28-30 MHz IFs.

MODULE B — SIX-METRE 500 mW TRANSMITTER

Again the complete transceiver uses three PCB modules. The receive and transmit converters are similar to the 144 MHz unit and the injection chain will be described in two versions to suit various IF frequencies.

The six-metre transceiver can be used with either a 28-30 MHz or 144-148 MHz IF, so not only can it be used with a HF transceiver but why not think about getting your two-metre multi-mode transceiver on 6 metres?

MODULE C & D — 70 cm 100 mW TRANSMITTER

This module has proved to be the most difficult design problem of the whole series. The two versions will be described, the first for 50-54 MHz or 28-30 MHz IFs and the second, a more complicated dual-conversion unit for a 144-148 MHz IF. This module will probably be left until late in the series to allow time to further develop some improvements to the existing prototype.

MODULE TWO — TWO-METRE 2 WATT LINEAR AMPLIFIER

This module is designed to provide a more usable power output from the transceiver, provides an output change-over relay and makes provision for controlling external preamplifiers and power amplifiers.

MODULE F — SIX-METRE 5 WATT LINEAR AMPLIFIER

This module is the six-metre version of Module E, described above.

MODULE G — SIX-METRE TRANSCIVER INJECTION CHAIN

By now some of you may be thinking of building a self-contained low power transceiver to power all of the transmitters you will no doubt build! Well, this is what is required. Build the complete IF sections of the VK3AFQ building blocks, then add this variable reference synthesised VFO to make it into a 'native' 50-54 MHz transceiver for driving transmitters or to catch some six-metre DX.

It is proposed to describe a similar unit for a 144-148 MHz transceiver at a later date, if interest warrants.

MODULE H — 150 WATT TWO-METRE POWER AMPLIFIER

Using the latest RF Power MosFET technology allows construction of a two-stage, two watt input/150 watt output power amplifier that will leave most bi-polar power amplifiers looking a little green and rivaling the signal quality of many good valve power amplifiers. Although the devices are not cheap at this stage they certainly represent excellent value. The first stage produces approximately 30 watts out and can be used on its own if required.

MODULE I — 150 WATT SIX-METRE POWER AMPLIFIER

This is the six-metre version of Module H.

All of the power amplifiers are fitted with detectors for power indication and to permit driving an Automatic Level Control loop. The VK3AFQ transceiver is provided with a transmit ALC input compatible with these designs. By using ALC, the amplifiers can be operated well within ratings at peak linearity and performance when properly tuned and aligned. These amplifiers are easy to align and appear to perform excellently on the air. They have been personally used on six and two-metres over several months.

Detailed descriptions of these modules will commence in the next issue of *Amateur Radio*.

TWO METRE METEOR SCATTER

Doug McArthur VK3UM

30 Rollaway Rise, Chimsdale Park, Vic, 3116

Meteor Scatter is an under-utilised mode of propagation available to the VHF and UHF operator.

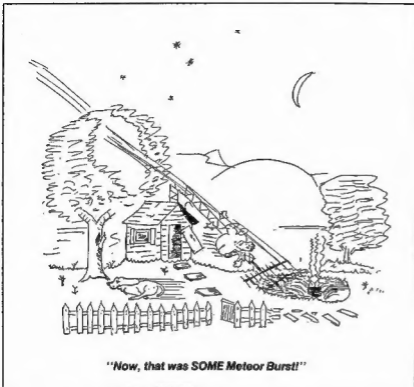
meteor is slowed by collisions with neutral molecules. The ionisation takes the form of a long thin column whose electron density is proportional to the mass of the meteor. The length of this trail is also dependent upon the mass of the meteor, its velocity and the angle of entry into the ionosphere. Additionally, the action of winds at this altitude, (which can be very strong), will deform the rapidly decaying trail. Trails can range up to 50 kilometres in length although typical lengths are about 15 kilometres. Space 'junk' re-entering the atmosphere will leave behind a similar trail.

The cone of this trail is most dense at the point of entry. As a consequence the reflected radio signal is characterised by a strong initial burst and if the trail is of a reasonable size the signal diminishes slowly. Hence the term of a meteor burst or a meteor ping. Thus the meteor's size, speed and direction of travel (dependent upon the zenith angle of entry) will primarily determine the received signal strength and duration of possible communication between specific communication sites.

The optimum frequency for the use of meteor scatter is in the 35-45 MHz region. Meteor scatter links are still used to complement forward ionospheric scatter in some remote parts of the world and provide a reliable communication mode. The signal strength is inversely proportional to the cube of the frequency and this equates to about an 8 dB reduction of signal level if the frequency is doubled. The density of the ionisation is greatest at the commencement of the meteor's entry into the atmosphere and consequently if the meteor is small, only a proportion of this trail may be detected. In practical terms, a meteor burst heard on 50 MHz would be about three times the length of that received on 144 MHz. The same relationship exists between 144 and 432 MHz. A change of operating techniques is therefore required for 432 MHz and above as the challenge of making QSOs becomes quite daunting as the burst durations will be in the order of tens of milliseconds.

DISTANCE OF POSSIBLE COMMUNICATIONS

Meteors commence to burn at about the height of the 'E Layer' and consequently the distance that can be worked is similar to that of a single hop from the 'E Layer'. Multi-hop 'E Layer' communication is not practical as the amount of energy scattered from the ionised trail is too small to support a second hop. Further, the possibility of, at that very time, having two trails in the optimum place is quite remote. It is feasible, during a very dense meteor shower, that this could be possible but to my knowledge such an incident is, as yet, to be recorded. Consequently the maximum distance is approximately 2000 kilometres. Forward scatter signals can be greatly enhanced by meteor



"Now, that was SOME Meteor Burst!"

When using this mode the ability to complete QSOs are not only dependent upon the stations technical capability (which can be relatively modest), but depends upon rigidly followed operating procedures.

The object of this article is to promote the mode, through the establishment of a National Two Metre Meteor Scatter Calling Frequency, along with the definition of a sequencing and calling procedure.

The article provides the basis of a national scheme, which will allow stations to complete QSOs via Meteor Scatter in the shortest possible time using sporadic meteors.

METEORS

The size of meteors that are of most interest for radio communications do not have to be as large as that of a 'falling star'. In fact, the numerous non-visible meteors, which range in size from 40 microns to eight centimetres in diameter, produce radio reflections.

Meteors entering the Earth's upper atmosphere can be characterised into two distinct classes.

Shower meteors are collections of particles orbiting the Sun all at the same velocity. Their relatively well-defined orbits allow for the prediction of when such showers will intersect the Earth's orbit. Their velocity and radiant, in terms of right ascension and declination (celestial latitude and longitude), have been catalogued. (ARRL VHF Handbook, Refer Table 1).

Meteor showers are generally named after the stellar constellations which, when viewed from Earth, form the background from which the radiant appears to originate.

As an example, the Leonid Meteor shower appears to originate from the constellation of Leo.

It is important to note that, for us in the Southern Hemisphere, this is not the case as the radiant point, although the same will, in fact, not appear from the same constellation.

Meteors vary in intensity from year to year and to predict the intensity of the shower or the exact time it will reach its peak, is not always possible. The Quadrantids (January) and Perseids (August) however show only slight variations in intensity from year to year but again to predict their peak is difficult. Unfortunately, scant information is available for the Southern Hemisphere with respect to shower meteors and the data listed is for the Northern Hemisphere.

Sporadic meteors are those that move in random orbits about the Sun and all are distributed throughout the year. They have no defined radiant nor predictable velocity. It is these sporadic meteors that the amateur can utilise daily.

True, shower meteors will provide short time excitement, but their time of arrival is difficult to define. Some showers may only last a few hours and being there at the time is a game of chance. Shower meteors can provide spectacular results on the lower VHF bands and are essential for those who wish to use this mode on 432 MHz (and higher) frequencies.

Meteors enter the upper ionosphere at a height of 80-120 kilometres and commence to burn rapidly. An ionised trail is formed as a result of the kinetic energy (of the meteor) which is converted to potential energy as the

Meteor Showers Table I—Meteor Shower Data for V.H.F. Use

Shower and Date	Time Visible		Optimum Paths and Times				Hourly Rate		Velocity, km/sec.	Period, Years	Next Maximum
	Rise	Set	N-S	NW-SE	E-W	SW-NE	Visual	Radio			
* January 3-5 Quadrantids	2300	1800	—	0300-0800 SW	0800-0900 S	0900-1400 SE	35	45	45	7	Note 1
January 17 Cygnids	0230	2130	—	0600-1100 SW	1100-1300 S	1300-1800 SE	—	—	—	—	—
February 5-10 Aurigids	1200	0330	—	1400-1730 SW	—	2130-0100 SE	—	—	—	—	—
March 10-12 Bootids	2200	0830	2330-0030 W 0530-0630 E	0330-0530 NE	0230-0330 N	0030-0230 NW	—	—	—	—	—
March 20 Coma Berenices	1800	0630	2130-2300 W 0100-0300 E	2000-2130 SW	—	0300-0430 SE	—	—	—	—	—
* April 19-23 Lyrids	2100	1100	0230 W 0330 E	2330-0100 SW	—	0700-0830 SE	8	12	31	415	Note 1
* May 1-6 Aquarids	0300	1200	—	0830-1000 NE	0630-0830 N	0500-0630 NW	12	12	66	76	Note 1
May 11-24 Mercids	1800	0630	2130-2300 W 0100-0300 E	2000-2130 SW	—	0300-0430 SE	—	—	—	—	—
May 30 Pegasids	2300	1200	0300-0430 W 0630-0800 E	0130-0300 SW	—	0800-0930 SE	—	—	—	—	—
June 2-17 Scorpids	2000	0300	—	0100 NE	2300-2400 N	2200 NW	—	—	—	—	—
June 27-30 Pons Winnecke	Does not set; min. at 0900	—	—	1500-1830 SW	1830-2330 S	2330-0300 SE	—	—	—	—	—
July 14 Cygnids	1800	1000	—	2100-2330 SW	0130 S	0330-0600 SE	—	—	—	—	—
July 18-30 Capricornids	2030	0400	—	0100-0200 NE	2300-0100 N	2200-2300 NW	—	—	—	—	—
* July 26-31 Aquarids	2200	0600	—	0300-0500 NE	0100-0300 N	0000-0100 NW	10	22	50	3.6	Note 1
* July 27-August 14 Perseids	Does not set; min. at 1730	—	—	2330-0300 SW	0300-0800 S	0800-1130 SE	50	50	61	120	Note 1
August 10-20 Cygnids	1200	0700	—	1700-1930 SW	2130 S	2330-0200 SE	—	—	—	—	—
August 21-23 Draconids	Does not set; min. at 0900	—	—	1300-1830 SW	1830-2330 S	2330-0300 SE	—	—	—	—	—
August 21-31 Draconids	Does not set; min. at 0700	—	—	1300-1630 SW	1630-2130 S	2130-0100 SE	—	—	—	—	—
September 7-15 Perseids	2130	1200	—	0030-0200 SW	—	0700-0830 SE	—	—	—	—	—
September 22 Aurigids	2100	1230	—	0030-0200 SW	—	0700-0830 SE	—	—	—	—	—
October 2 Quadrantids	0500	0000	—	0900-1400 SW	1400-1500 S	1500-2000 SE	—	—	—	—	—
October 9 Giacobinids	0600	0300	—	1100-1600 SW	1600-1700 S	1700-2200 SE	Note 2	20	6.6	1972	
October 12-23 Arietids	1900	0700	2130-2330 W 0230-0430 E	—	—	—	—	—	—	—	—
* October 18-23 Orionids	2230	0930	0000-0200 W 0600-0800 E	0430-0600 NE	0330-0430 N	0200-0330 NW	15	30	68	76	Note 1
* Oct. 26-Nov. 16 Taurids	1900	0630	2100-2300 W 0300-0500 E	0130-0300 NE	0030-0130 N	2300-0030 NW	10	16	27	3.3	Note 1
* November 14-18 Leonids	0000	1230	0300-0500 W 0800-1000 E	—	—	—	12	Note 3	72	33.2	1999
November 22-30 Andromedids	1300	0600	—	1600-2000 SW	—	2300-0300 SE	Note 4	22	6.7	1977	
* December 10-14 Geminids	1900	0900	0030 W 0330 E	2130-2300 SW	—	0500-0630 SE	60	70	35	1.6	Note 1
* December 22 Ursids	Does not set; min. at 2030	—	—	—	0130-1530 S	—	13	13	38	13.5	1972, 1985
* May 19-21 Cetiids	0530	1430	—	1100-1230 NE	0900-1100 N	0730-0900 NW	—	—	20	37	—
* June 4-6 Perseids	0500	1730	0800-1000 W 1300-1500 E	—	—	—	—	—	40	29	—
* June 8 Arietids	0330	1530	0600-0800 W 1100-1300 E	—	—	—	Note 6	70	38	—	
* June 30-July 2 Taurids	0500	1700	0700-0900 W 1300-1500 E	1130-1300 NE	1030-1130 N	0900-1030 NW	—	—	30	31	—

* Major showers—Last four are daylight showers.

Times given are local standard at path midpoint

NOTES

- These streams are evenly distributed and little year to year variation is to be expected.
- Very concentrated stream. Peak years give up to 400 meteors per minute, but with duration of only 6 hours. 1946 peak was most concentrated shower in amateur radio experience up to that time (see December, 1946, QST, page 43) but 1959 recurrence was deflected and was hardly observable.
- Peak years give 60/hour visual. In the peak years of the 1800s, prior to being deflected by Jupiter and Saturn, this shower gave 1200 per minute. Spectacular results in 1965 and 1966 are reported in Jan. 1966 QST, page 80, and Jan. 1967, page 83.
- Before being deflected by Jupiter this stream gave peak year rates of 100/minute. No notable rates have been observed since, though the stream could return.
- Short duration shower. Peak years the radio rate is 165/hour.
- This intense daylight shower begins June 2 and runs to June 14 with radio rates from 25 to 70/hour.

Meteor Shower Data for VHF use.
(Courtesy of ARRL VHF Handbook)

scatter and, in typical high power VHF commercial circuits, the very small meteors are utilised. In amateur circles the generation of such power, coupled to very high gain antennas (low radiation angle), generally places such transmissions beyond our licensing conditions. The amateur is thus faced with using the larger meteors which, in their wake, provide a high degree of ionisation. The signal levels can be quite high but their duration can be equally as short. Daunting though this may first appear, contacts can be made quite easily (on VHF) with patience and defined operating procedures. Contacts have, in fact, been accomplished overseas (Canada) on 1296 MHz by stations using EME commensurate equipment.

The writer first became interested in this medium of communication in the early 1960s whilst living in Alice Springs (VK5KK and later VK8KK). Using a modest set-up I used to monitor the vision carriers of the various Channel 2 television transmissions and was surprised at the consistency and level of the forward scatter signals. It was rare that signals could not be detected. On top of the residual forward scatter, meteor bursts were, to say the least, impressive and the signal level, regularly exceeded SS.

These initial experiments led to tests being conducted on 50 MHz with Ray VK3ATN, Mick VK5ZDR, Col VK5RO, John VK5DJ and David VK4AK, (then at Mount Isa, but now VK3AUU). Incidentally, it was during these initial tests with Ray VK3ATN, that he tried his HF European Rhombic on 50 MHz. The dramatic results achieved with this antenna subsequently led him on to constructing a two-metre stacked Rhombic with which he achieved the first ever VK Moon Bounce QSOs. (A milestone in our amateur radio history). Later, when I moved to Darwin (1968-1975) these experiments were continued with David (who had then moved to Tennant Creek with the call of VK8AU) and Ross VK4RO, at Ayr. Countless QSOs were made via 52 MHz Meteor Scatter during this period.

Well, 50 MHz is a breeze!! Bursts lasting well over a minute are common and overlapping bursts are a bonus.

As mentioned earlier, as the frequency increases the duration of the burst decreases and at 144 MHz communication starts to become more of a challenge. The burst here has shortened to about a third of the 50 MHz signal although the peak signal remains about the same.

OPTIMUM TIMES TO WORK METEOR SCATTER

The ARRL VHF Handbook, and other publications, list tables of the known meteor showers. Unfortunately for us in the Southern Hemisphere this data will not necessarily coincide with respect to local times, and optimum path angles. Moreover, not all showers will be visible in the Southern Hemisphere as appear in the Northern Hemisphere. The Perseids (July 27 to August 14), Gemindis (December 10 to 14) and Quadrantids (January 3 to 5), seem to bear a relationship to this published data. Very little information is available for the Southern Hemisphere and accordingly, the tables, as published, should be treated as a guide to the shorter duration meteor showers. A typical dispersion of meteor shower activity is shown in Figure 1.

Local Astronomical Yearbooks do provide information on the visual showers but, although helpful, do not provide detail of the nature contained in the ARRL VHF Handbook.

Fortunately it can be predicted that, for sporadic meteors, the best time is when your location is travelling at right angles to the

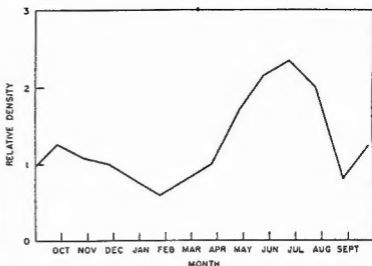


Figure 1:

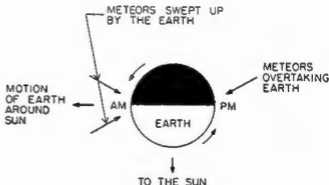


Figure 2:

Earth's motion. At this time you will be 'facing into space' and the number of sporadic meteors will be at their maximum. This time coincides with dawn and the best period is about one and a half hours before to about one hour after sunrise. (Refer Figure 2).

Twice a year, and for a period of several days, we intercept the remnants of Halley's Comet. These showers occur in the first week of May (Aquarids) and the third week of October (Orionids) and these days provide meteor showers of significant proportions. (Refer Figure 3).

Due to the Earth's orbit and the nature of the space debris, the intensity of such showers will vary from year to year. Notwithstanding such variations, they do provide an exciting time for

the meteor scatter enthusiast. Many other meteor showers exist and, although, as mentioned earlier, they are documented for the Northern Hemisphere, it is difficult to relate them to our situation. Additionally, it would seem reasonable to assume that we may experience meteor showers of intensities greater than those located to our north. Perhaps some reader may be able to assist with such information.

You will, I hasten to add, hear sporadic meteor pings throughout the day but their frequency will be greatly diminished. Space junk returning to Earth may provide a 'space junk ping' in the same way as a meteor (not that you will be able to tell the difference!). It is worth remembering that you do not require a

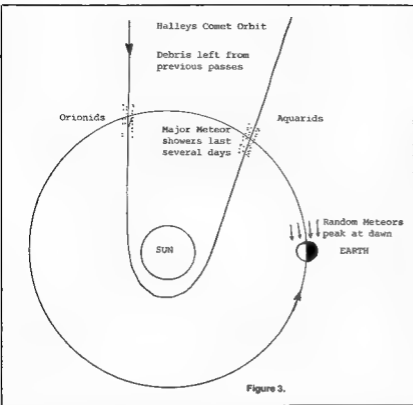


Figure 3.

meteor of the size of the visual falling-star of this size would provide a classic one-minute-plus burst (on 144 MHz), but the smaller ones, the size of a grain of sand (or smaller) and not visible to the naked eye, are all that is required to utilise this communication mode.

I have spent many hours standing outside the shack window peering into the darkness whilst listening to the pings from a distant station. It is rare that you see the ones that provide the signal, but when you do they are the ones that block your receiver, cause the speaker to leap off the bench and the family to come running to see what caused the noise.

EQUIPMENT REQUIREMENTS

As discussed earlier, the signal characteristics of a meteor burst is that of a strong leading edge with a tail diminishing rapidly over a variable length of time. The initial burst can be extremely strong (exceeding 59) but equally it can be very short to the extent that all you hear is half a syllable. The length of the tail is what we are interested in to provide a QSO. A listener will quickly detect short meteor pings for up to one second (on two-metres), but patience is required to make a QSO. Extending the period of the tail with increased effective radiated power (EIRP) and increasing the receiver sensitivity is essential. However, a modestly equipped two-metre station running 100 watts output to 12 dB of antenna gain and a receiving system with a 1 dB or less noise figure is adequate (with patience) to work similarly equipped stations.

Meteors entering the ionosphere do so at varying angles and, as such, it would be an advantage to aim the antenna towards the expected trail. Nevertheless, the height of the meteor trail requires a very low radiation angle to obtain the maximum usable distance of

communication. Conversely, as the zenith angle of the meteor is random, knowing where to aim a high gain antenna with a low angle of radiation is a problem. What one would like to have is an antenna beam width of 60 degrees, gain of 15 dB, and a radiation angle of less than two degrees!! In practice, noting the scant data available for the Southern Hemisphere, it is best to beam directly towards the distant station. (Great circle bearing).

The speed of the meteor, relative to each station, dictates that Doppler shift will occur on the incoming signal. On 50 and 144 MHz this is relatively small and generally will not be noticed. If you listen very carefully the Doppler is most evident at the commencement of the burst. This can, when you are attempting to net a station on very short pings, cause you to be a little off frequency.

OPERATING TECHNIQUES

Recently, a National Two Metre Meteor Scatter Calling Frequency of 144.350 MHz USB has been chosen. The choice was made to avoid spurs and such problems which are encountered on Channel 5A. Hopefully, with activity, it will become another 144.100 MHz, but devoid of 'locals' rag-chewing on the channel!!

There are a few basic rules to observe when entering into this mode and foremost is the aspect of frequency accuracy. In Melbourne, most are fortunate to be able to receive and calibrate their equipment using VNG's harmonic on 144.000 MHz, however, this service, used by so many for various reasons, will cease on March 31, next year (or earlier), unless some dedicated government department or benevolent organisation comes to the fore. The digital displays of most transceivers are, however, accurate to within 1 kHz. If you wish to instigate a spirited debate raise the frequency accuracy question on air!

Regardless of those who may claim accuracy to the nearest 10 Hz(!) — it does not matter too much as you will be able to net the distant station given 15 minutes of patient listening. It is important that frequency stability is maintained during your operating period. It may be an advantage to leave the equipment on overnight to thermally stabilise prior to commencing a meteor scatter session if you can disable the AGC, this too is an advantage, as the initial burst is more than likely to block the receiver and, in so doing, cause you to miss the tail of the signal.

It is also essential that the 'Master Station' does not attempt to net the 'Calling Station' otherwise it will become a 'leap-frogging' dual, with all participants finishing nowhere!

Similarly, if a partial exchange has been made, the 'Calling Station' (if they find themselves to be a little off frequency), should not net the 'Master Station' as it is reasonable to expect he already has you resolved and a further frequency shift will only add to the confusion. Net the frequency as accurately as possible and then use your receiver's incremental tuning (RIT) to resolve the other station.

The above comments are oriented towards SSB. Overseas, high speed CW has proved popular. Europeans, for example, on 432 MHz transmit very high speed CW, record the received signals and replay them at a reduced speed. Naturally this introduces a delay in responding to a calling station during the 'decoding' process but, at this frequency, the burst length is so short as to require this procedure. Providing the QSO is completed within the same day, it is quite valid!!

This would seem to be a total 'off-put' to a prospective new Meteor Scatter operator however, it is not nearly that difficult for 50 or 144 MHz operators. Six metres is 'easy' and this style is aligned towards the Two Metre Band Enthusiasts as this mode has not been greatly utilised in this country.

Overseas stations have preferred to transmit sequence periods of five, two-and-a-half, two, one or even less than one minute for CW and SSB. The communication rate is slow under such sequencing. Invariably when a long burst (15 seconds) is received, it will fall in the middle of the distant stations sequence. It also follows that a further burst may not occur for some time and it may again occur during a transmission sequence, leaving you unheard at the distant end!

Recently, I have developed a means that uses a little hardware to overcome the obvious tedious requirement of fast sequencing. This method was chosen to allow modestly equipped SSB stations, with little experience in the mode, to become successfully involved by making QSOs without spending an exorbitant time at the rig.

The object here is to intercept the burst during the transitional period when going from transmit and receive, hopefully completing the QSO during the one burst.

Observations have shown that, during a non-meteor shower period (and around dawn), you will, on average, receive about three 10 second or longer bursts, in a one hour period. Thus you should be able to work three stations per hour! Some operators may scoff at this aspect but for the dedicated VHF/UHF operator to regularly work distances of up to 2000 kilometres is an achievement.

Time is deceptive. A great deal can be said in five seconds. Two stations, with fast footwork, or is it 'tongue-work', can complete a total exchange and confirmation in less than 10 seconds. This is not the mode to provide your name, QTH, rig and family details! Choose your words carefully, abbreviate where you can and success will be achieved. Plan ahead what you need to say and the order you will respond

when the time comes. Rest assured you will be caught by surprise and become confused at first. This is natural and you will improve with time and practice.

It is reasonable to ask how you can keep this short sequencing going for long periods, assuming that the calling sequence has been set at five seconds without developing a repetitive injury on CW or languishing on SSB. In the latter case, your fate may well have been decided by your fate as calling CQ each and every 10 seconds at 0530 in the morning, can be a health hazard!

On October 28, 1985, a meteor scatter experiment took place, with some 20 participating operators who were divided into groups of two or three operators. Each group were 'allocated' selected frequencies commensurate with adjacent channel interference and compatibility. Liaison was established on 3.680 MHz to allow a check-in before the tests to ensure that the initial station was 'on-track' and ready to proceed. The results of the test were impressive (although predictable) as nearly all of those who participated completed their QSOs.

Contacts were made between VK1 and VK7, northern VK2 and VK3, VK3 and VK4. On this occasion all participants used 10 second SSB sequencing. Needless to say, there were many who had sore throats that morning. The enthusiasm created by the test with those unfamiliar with this aspect of operating was gratifying and more was set up again at a future date. Incidentally, the morning chosen was supposed to be a peak of a meteor shower but this proved elusive and all contacts were made from sporadic meteors. Somehow, we never did get around to set up another test!

An electronic aid was the obvious answer to overcome the laborious calling and reply sequences. Anyone with a computer may generate CW and it is not difficult to interface this to your transmitter to generate the sequence timing required. Nevertheless, it is the SSB mode that provides a greater communication speed and this is discussed in detail below.

DIGITAL VOICE STORE

I had been contemplating a method of sending five-second SSB sequences for some time. The endless tape method was tried and discarded because of the difficulty of accurate timing, and the inevitable RFI problems. The 30-second tapes always seemed to be 32 or 28 seconds, when run on my recorder. Obviously if you could adjust the speed of the recorder to match the tape you could overcome the problem but it was decided the effort was not worth pursuing.

Thought turned to digitally storing a message on the computer, but it was not convenient to tie up the 'big box' for long periods. Besides, it has the habit of generating spurious signals on the 144 MHz band.

What was needed was a simple stand-alone analogue-to-digital conversion store into memory, and a complementary digital to analogue back end. A design had been established when, low and behold *Electronics Australia* in their February 1987 edition, published the basis of just what was needed and with the added bonus of a PCB layout. With the assistance of Peter VK3AZL, who quickly produced the main PCB, it was put together without any drama. Several 64k memory boards were on hand from a now unused 6809 computer system and one of these provided the memory required, in lieu of the original design.

There are several sampling rates available with the *Electronics Australia* design. The most attractive, consisted of a 9 kHz bandwidth, 4.1 seconds of voice storage using 62k of RAM was chosen, not for the bandwidth, excessive for SSB, but for the time of 4.1 seconds. This was ideal for a five-second sequence.

The original EA design incorporated a 4 MHz

crystal for timing which could be divided to provide a 10 second pulse to initiate the replay sequence. Unfortunately, in my case, it was found that the crystal was considerably low in frequency and the supposedly 10 second pulses were invariably at 10.2 second periods. This is quite significant as the time slip became a nuisance over a one-hour period. Again the answer was simply overcome by using the mains to control the timing. This has proven to be quite precise for the accuracy required. 'Resetting' the device initially to the standard VNG time, it will stay correct throughout the day.

As an added feature, it was decided to add a Morse 'K' tail to the Digital Sound Store. Again this feature is locked to the internal timing and usually provides an indication to the distant station that the station is going to the receive mode. Another adjunct was the adding (as an alternative to the 'K'), of a CW '7'. The feature was to alert a distant station that an unidentified signal had been heard and/or more information was required. The question mark tail (. . .) is sent for two minutes following the unidentified burst and the system reverts to the 'K' call. Further applications of this 'tail' will be detailed later in this article.

When an identified signal is heard (the operator should have the microphone in their hand at the ready), the PTT action disables the Sound Store and the QSO is initiated. Should the contact not be completed at that particular burst, the Sound Store is quickly changed to send the appropriate response required.

REPORTING SYSTEM

There are various schools of thought and methods being used to exchange reports when working via Meteor Scatter. Some use the Moon Bounce system (EME). Even this can be confusing because there are currently two systems in use, one being the 144 MHz method and the other as used on 432 MHz and higher frequencies. The 432 MHz and above systems use the T, M and O reporting scheme where the T is sent repeatedly during the last 30 seconds of the sequence to indicate that only bits of the signal have been received. The M indicates that only parts of the signal have been received whilst O is used for indicating full call signs have been received. Additionally, a repeated Y is used to signify that the originator has received his call sign and repeat only yours and a G is used to signify that the originating operator is requesting a Grid Square reference (particularly useful for Grid Square hunters). The F character is sent along with the letter of the report to the initial response (eg RTTTRT or RMRMR or ROROR or vice versa). The sequence is followed by a complete sequence of RRRRRR and final confirmation given by a 737373 sequence. A valid QSO would be recorded with an M or O report combined with the following sequences. It is rare, in my case, to have had to resort to this reporting system unless signals are so weak that a simple 32N or similar report does not succeed. I do not favour this method for Meteor Scatter Propagation.

Another reporting system favours a S1, S2, or S3 where the numeral indicates the length of the burst, (eg S2 indicates two second burst). Again the author does not favour this method of reporting for Meteor Scatter Propagation.

For simplicity, the conventional reporting system is favoured. This system is practical and easy to use, even though the signal reaches a large value then decays rapidly. There is no time to advise the other station that they are varying from 5x9 to 4x1. One has exchanged call signs and a report, which constitutes a valid report, and hence a QSO. It is suggested that the conventional system be adopted for the 50 and 144 MHz bands. Maybe those who will attempt a 432 MHz Meteor

Scatter QSO, may have to resort to adopting one of the previously described methods.

SEQUENCING

It is essential that one has an accurate time source at their disposal or one that they can adjust to a time signal prior to commencing a Meteor Scatter session.

The basis of a successful operation rests upon your, and the other station's, ability to maintain a precise time sequencing schedule.

The transmit sequences will commence at the even minute, termed zero sequence and at five seconds after the minute termed the 'five sequence'. Thus, a station transmitting the 'zero' sequence will call from 00 to 05, 10 to 15, 20 to 25, 30 to 35, 40 to 45 and 50 to 55 seconds after the minute. Conversely, a station transmitting the 'five' sequence will call from 05 to 10, 15 to 20, 25 to 30, 35 to 40, 45 to 50 and 55 to 60 seconds after the minute.

If you choose to build a Digital Sound Store along the lines previously described there is a deliberately in-built overlap for practical timing purposes. The Digital Sound Store provides 4.1 seconds of voice and the CW tail adds another 220 mill seconds. Additionally your transceiver has a finite period to change over and this brings the transmission length close to 4.5 seconds. This then provides half-a-second of extra receive time that may benefit the loss of data should both stations not be transmitting on their precise sequence.

In practice it has been found that maintaining a half-second accuracy over a two-hour period to be readily achieved. Fundamentally, the accuracy is dependent upon the mains accuracy and your ability to release your 'set-time' button to coincide with a transmitted standard.

If you do not have an automatic sending system then listen on 144.350 MHz and after a short time you will be able to distinguish from the timing of the bursts what sequencing the distant station is using and if the following beam heading recommendation is followed, approximately where the distant station is located. You will naturally respond during the opposite sequence.

It is suggested the following sequencing criteria should be adopted. *Stations bearing north or west, transmit during the 'zero' sequence. Stations bearing south or east, transmit during the 'five' sequence.*

QSO PROCEDURE

The objective of the short sequencing procedure is to intercept a meteor burst of sufficient length to complete a QSO during the one burst. This is not too common on two-metres where shorter bursts are far more prevalent. Thus, the following call and response practice should be observed to avoid, where possible, confusion at the distant end.

The following examples will serve to explain what is required and for explanation purposes it is understood that the station calling CQ is the master station and the station responding to the call is the calling station.

(a) A station calling CQ

Your QSO should be opened clearly, and quickly avoiding phonetics. Most operators can manage three CQs in the 4.1 second period. A station responding to the CQ should, after the CW tail, respond to the CQ's call sign, give their call sign with a report. The master station would respond with the calling station's call, QSL, and the report. The calling station would respond with 73.

To emphasise the short exchanges this is all that is required.

CQ VK3UM CQ VK3UM CQ VK3UM K

(Master station 4.5 seconds)

VK3UM VK4AGO 5n4 (Calling station)
VK4AGO QSL yr 5n3 (Master station)
QSL 73 (Calling station)
73 (Master station)

Note 5n4 refers to 5 and 4 or fifty four and yr relates to a quickly spoken 'your'.

A completed QSO in less than 10 seconds!
Five second sequencing is abandoned for the duration of the burst.

(b) The master station may not receive the full call sign of the calling station but as an indication to the calling station that it is being heard, the CW tail is changed from 'K' to the question mark (. . . ? . . .). This is run for a two-minute period following the last burst. The question mark tail serves as an indication to the calling station that unidentified pieces are being received of their transmission.

(c) The master station identifies the calling station but fails to get their report. They would then change the r CQ in the Voice Store to the following

VK4AGO 5n4 VK4AGQ 5n4 VK4AGQ 5n4 (4.5 second normal sequence).

Note that the CW tail (.) indicates to the calling station that the master station has not received their report and the calling station would then respond in the other sequence with only the report. Call signs have been confirmed so are consequently not required, (eg 5n3 5n3 5n3 5n3 5n3 5n3).

(d) Once a contact has been initiated the combined sequencing of (a) and (c) should be employed as long as required to complete the QSO. It is essential not to jump a step otherwise you will confuse the other station. Normal y the bursts are of sufficient length to

partially, if not fully complete, the QSO in one or two attempts. On long bursts it is possible to work two or more stations during one burst. The very common short bursts can be utilised, with patience and application of the above procedure, providing it is rigidly followed.

FINAL COMMENTS

Metre Scatter may not be your cup of tea, but to a serious VHF/UHF enthusiast it is a further challenge. High power and very large antennas are not essential. QSOs are available for the taking, if you wish to participate.

Aircraft Enhancement is now commonly used and hundreds of QSOs have resulted from the original articles in AR. This has been a breath of fresh air to those who thought 'that there was no way they could work out of their mine shaft.' This mode has opened up the Melbourne-Canberra and Sydney paths, as well as the Sydney-Brisbane and Sydney-Western Victoria-Adelaide paths. The two-metre and 70 cm bands have come alive again and activity is still on the increase.

You too can work up to 2000 kilometres on two-metres and the band does not have to be 'open' . . . only the shack! Don't sit back and wait for next seasons Sporadic E, listen to the Metre Scatter Frequency. Chances are that you will be most surprised at what you hear. Perhaps you too will be encouraged to give Two Metre Metre Scatter a try!

NATIONAL TWO METRE CALLING FREQUENCY

Frequency	144 350 MHz Upper
Sideband	Upper
Times	(2000-2200 UTC)
	Weekends or evenings at random
Sequence	North or West bearing stations transmit:

00-05, 10-15, 20-25, 30-35, 40-45, 50-55 seconds
South or East bearing stations transmit
05-10, 15-20, 25-30, 35-40, 45-50, 55-00 seconds
Long bursts use break in
Liaison 3 690 MHz

A further article will appear in AR describing the additional timing, control and CW generator board, (mentioned in this article), which is used in conjunction with the *Electronics Australia* Digital Sound Store A PCB layout shall be included and the project uses easily obtained 74LS ICs.

ACKNOWLEDGMENTS

I would like to make special mention to the following amateurs who have participated in our Metre Scatter Schedules, all of whom I have had the pleasure of working on many occasions by this type of propagation. They include Bill VK4LC, Angus VK4AGQ, Rod VK4BRR John VK2FG and Gordon VK2ZAB.

Additionally special thanks to Ian VK1BG who has monitored the forward scatter signal, and meteor bursts, to collect further Aircraft Enhancement data and Ross VK2DVZ, whose present QTH precludes him from making a QSO, but relentlessly sends comprehensive reports of the observed meteor scatter bursts and duration.

Finally thanks to Roger VK2ZTB, who as always, is a wealth of information and has supplied reference material of (2) and (3) as listed below.

REFERENCES

1 ARRL VHF Handbook
2 DAVIES KENNETH *Ionospheric Radio Propagation*, National Bureau of Standards Monograph 80
3 HARRISON ROGER *6 UP Magazine*

Repeater Reverse for the Yaesu FT-730R

David Horsfall VK2KFU
PO Box 257, Wahnroona, NSW, 2076

The Yaesu FT-730R is a popular FM-only UHF mobile rig, and in common with its cousin the FT-290R, lacks a repeater reverse facility, and incorporates a redundant CALL button instead.

This article shows how to adapt the famous modification for the FT-290R that turns the CALL button into a repeater reverse button. It is assumed that the reader is familiar with this modification. Perhaps it is not well-known that the tone call is still operative merely by pressing the PTT at the same time.

A quick summary of the modification is in order. When the CALL button is pressed burst switch Q2018 is switched on. This in turn activates the burst oscillator Q2019 and PTT switch Q2020. Whenever the PTT line is enabled pin 4 on the microprocessor Q2001 common to all the series is grounded via diode D2006 thereby shifting frequency by the appropriate offset. The modification grounds pin 4 through the CALL switch via an extra diode and prevents the tone oscillator from enabling PTT.

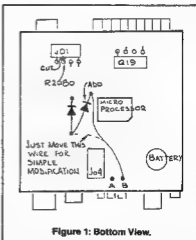
Now for the practical side. Unscrew the

bottom cover of the rig and disconnect the speaker wires to get them out of the way. The microprocessor is now quite visible. With the knobs facing you look for the wire coming from the pad marked B next to connector J04. Follow this to where it terminates close to the microprocessor. This wire is the CALL line. Locate the diode D2006 and solder the anode of another diode, 1N914 or similar, to the anode of D2006. The cathode is terminated on the pad of the aforementioned wire next to the microprocessor. Now locate the connector in the top left hand corner, J01. Counting from the right there is one capacitor and three resistors just under it. Grit your teeth and cut the lead on the second resistor, R2080. Reassemble and test. Repeater reverse is now activated with the CALL button and if the tone call is desired it can be obtained by pressing PTT as well.

It is also worth mentioning that there is a simpler version of this modification if the tone call is not desired at all. Simply move that wire from where it terminates close to the microprocessor to the anode of diode D2006. This is the essence of the modification for the FT-290R that appeared in another place, but retaining the tone call is almost as easy.

Technical Editor's Note:

The technique of simulating PTT to the micro-



processor to give reverse repeater on receive can be used on other brands and models. Many rigs use PTT information to cause the microprocessor to shift the PLL frequency for repeater operation.

BUILDING BLOCKS REVISITED

— Part 4

Harold Hepburn VK3AFQ
4 Elizabeth Street, Brighton, Vic. 3186

This article covers Module 2, the IF filter, and Module 9, the VFO.

Before describing these modules in detail, some general comment on the IF crystal filter is called for.

Since the early 1960s the crystal filters used by amateurs have used the lattice configuration. The difficulties of 'home-brewing' this sort of filter were (and are) many, and the advent of commercially available units was welcomed with open arms.

The current advertised price of such filters is between \$A120 and \$A200. This is before import duty, sales tax and the dealers margin is added. These costs could add another \$A50 to \$A100 on your purchase.

With the above thoughts in mind and the prohibitive cost another type of filter configuration, known as the ladder filter, which is just as good as the lattice type, allows one to contemplate home-brewing with a minimum of trouble and expense.

The ladder type filter, so far as the writer can ascertain, surfaced during WWII where it was found in equipment used by the German armed forces. The technique fell into disuse after the war and did not resurface until the late 1970s.

At this time there appeared, in the amateur literature, references to empirical experiments carried out using crystals intended mainly for the — then burgeoning — CB service.

It was not until the February 1979 issue of the RSGB magazine *Radio Communications* that an article appeared which put ladder filter design on a firm footing. It was written by J A Hardcastle G3JIR. Those wishing to learn more about ladder filters are directed to this and subsequent articles by G3JIR.

It was not easy, even in the late 70s, to obtain bulk supplies of crystals all on the same frequency. Today the supply scene has changed and crystals, all on the same nominal frequency, can be purchased for as little as \$A0.40. They come from the computer industry. The ladder filter, thus has become a very practical home-brew possibility.

Figure 14 shows a typical six-pole ladder filter and its 'tuning' capacitors. Depending on the frequency of the crystals (they should all oscillate within a range of 150 Hz for SSB filters) and the characteristics of the quartz itself, G3JIR's article shows how to calculate the value of C1 to C9 and the terminating load resistance.

Given that six crystals have been selected from a bulk supply, it may be that the capacitor sizes calculated by the Hardcastle method are non-standard. However, the writer has found that by paralleling two standard value capacitors he can always get close enough to the calculated value to produce an excellent filter. The filter board of Figure 16 has been laid out with this technique in mind.

To make the whole project even easier, it is understood that the Frankston and Morrongton Peninsula Amateur Radio Club, PO Box 36, Frankston, Vic. 3199, will be making available matched sets of crystals, including matching BFO crystals and resonating capacitors.

MODULE 2 — THE CRYSTAL FILTER BOARD

Figure 15 gives the circuit diagram of the module while Figure 16 shows the parts placement on the six inch x 1.5 inch (152 mm x 38 mm) circuit board. With the exception of the diplexer (L5 and L6), the filter is used for both transmission and reception.

This diplexer ensures that the double balanced diode mixer used in the (yet to be described) mixer stage of Module 1 is properly terminated in 50 ohms at all of its output frequencies, not only at the required output of 8 MHz. This is a prime requirement of diode DBMs.

The 2N2222A buffer stage has an input impedance of close to 50 ohms and its collector load matches the crystal filter. When in the transmit mode, the input to the buffer stage is from the balanced modulator of Module 6, Figure 6 with the changeover being made with a miniature relay.

It should be noted that a mismatch occurs between the 200 ohm output impedance of the balanced modulator and the 50 ohm input impedance of the 2N2222A buffer. The consequent loss of gain is not important in this particular instance.

If, in other applications, it is necessary to provide a better match for gear reasons, then a 4:1 broadband matching transformer could be interposed between the two stages.

The filter removes one sideband and the SSB signal is amplified in a BF981 stage. This amplifier is exactly the same as that on the IF amplifier board (Module 3, Figures 12 and 13).

No values have been put on RL1/RL2 or on C1 to C9, since, as explained, they depend on the actual crystals used.

As an indication, the following values were necessary for two differently sourced batches of 8 MHz crystals used by the writer.

	Batch 1	Batch 2
RL1 + RL2 — ohms	330	180
C1 = C9 — pF	66	100
C2 = C8 — pF	56	82
C3 = C7 — pF	66	100
C4 = C5 — pF	220	470
C6 — pF	66	120
Centre Frequency — kHz	8002	7999
3 dB bandwidth — Hz	2682	2548
90 dB bandwidth — Hz	4333	4210
Ripple — dB	>1	>1

In both cases the design 3 dB bandwidth was 2700 Hz and the nearest standard capacitor/resistor value was used. Trimming to the calculated values only affected the bandwidth by a few hertz, leading to the belief, that the approach is a practical one. Varying the load resistance by one standard resistor value either way had a little more effect, with top ripple increasing to just under 2 dB.

CONSTRUCTION AND TESTING

If the module is required only for reception, the relay and its associated diode can be omitted and a link put between the appropriate points on the board.

There are no constructional hazards and the technique described in Part 3 for winding the coils will be of assistance. The leads of the BF981 need to be bent down to fit into the board, the method was also detailed in Part 3.

Before applying power, two equal value resistors should be used to terminate the AGC line. As in the case of the IF strip, one goes between the AGC pin and +12 volts, the other between the AGC pin and earth. The output pins are terminated with a 51 ohm resistor, which is monitored with an RF probe and meter. Sufficient signal at 8 MHz, injected from a signal generator or the BFO, is injected into the input pins. It might be necessary to swing this input signal and/or vary its level, until an indication is seen on the probe meter. The tuning slugs of L5, L6 and L7 are adjusted in that order for maximum meter reading, reducing the input signal as peaking proceeds to keep the meter reading on scale.

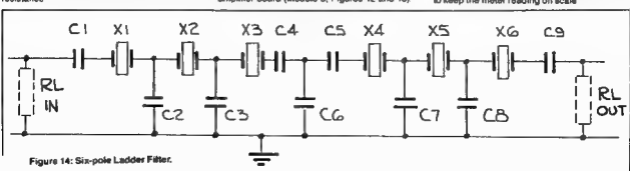


Figure 14: Six-pole Ladder Filter.

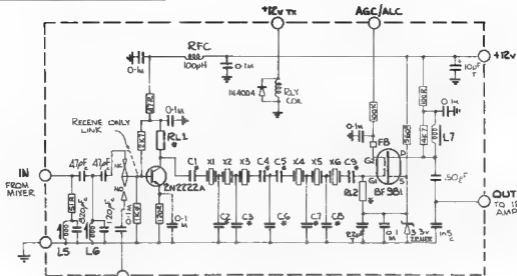


Figure 15: Module 2 - Circuit.

NOTES:

- 1 All resistors 1/4 W 5 percent
- 2 M = Monolithic Ceramic Capacitor
- 3 C = Ceramic Disc or Plate Capacitor

4 Relay is DPCO National Type HB2-DC12

5 L5 = 12 turns 26 gauge Enamel Close Wound on Neosid Type A Former — F29 Slug

6 L6 = 25 turns 32 gauge Enamel Close Wound on Neosid Type A Former — F29 Slug

7 L7 = 27 turns 32 gauge Enamel Close Wound on Neosid Type A Former — F29 Slug

* = See text for discussion of values

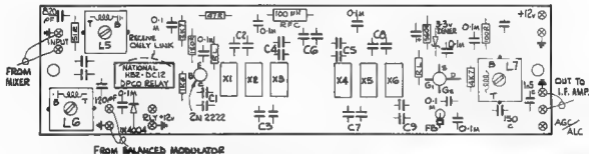


Figure 16: Module 2 - Component Layout.

It will be found that L5 is fairly broad in its tuning and the peak may be difficult to identify. Final peaking can be done only when the receiver is finished.

MODULE 9 — THE VFO

Figure 17 gives the circuit diagram of the 2.9-3.4 MHz VFO and its associated power supply. Figure 18 shows the parts placement on the two 2.5 inch x 1.8 inch (64 mm x 46 mm) PCBs used. Figure 19 is the drilling detail of the recommended Edgystone 6908P diecast box housing the units and Figure 20 shows the disposition of the boards and associated off-board components, within the box.

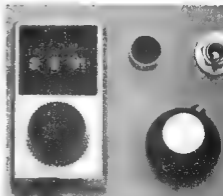
The VFO is a standard Clapp circuit but uses varactor main tuning instead of the more conventional variable capacitor. As explained in Part 1 of this series the high cost of variable capacitors and the virtual non-existence of suitable capacitor drive mechanisms has required work to produce a practical alternative.

It must be noted that if a would-be constructor already has a 220 pF swing capacitor and a suitable drive mechanism at hand, they can be used in place of the BB212 main tuning varactor diode.

In this design the goal was to produce a VFO that had a low phase noise. One of the main criticisms of current amateur commercial 'Black Boxes' is that the oscillator phase noise is high, typically around -70 dBc, which has left the receiver open to interference caused by reciprocal mixing. The VFO described in this article achieved a phase noise of -115 dBc in a 1 kHz bandwidth 3 kHz out from the carrier.

The oscillator inductor, L8, is wound on an Amidon T68/2 toroid. Its nominal inductance of 11.5 microhenries is higher than is normally suggested in order to increase the energy stored in each oscillation cycle. The frequency determining capacitors, 100 pF, 82 pF and the two 1500 pF, are styroflex types as their temperature characteristics are much better than ceramic discs or silver mica capacitors.

The oscillator proper is an MPF102, which is followed by a two stage FET/bipolar buffer. It is recommended that substitution of the active devices not be made. Since they are common stock items, their supply should present no difficulty.



Close-up view of the Multi-dial.

The power supply for the VFO, and especially the varactor tuning voltage, must be very clean and stable. The standard three pin regulator is just not good enough. If, as in this design, a five volt change of varactor tuning voltage produces a frequency change of 500 kHz, then the 'sensitivity' is 100 kHz per volt or 0.1 Hz per microvolt. A 7808 regulator has a typical noise output of up to 90 microvolts and, if used in place of the regulator described, would produce an output that was effectively FM'd by 8 Hz. The 723 regulator used in the configuration shown, has a noise output of only two microvolts and does not significantly modulate the carrier.

The 12 volt supply for the 723 is already regulated, which removes some of the strain on it. The 1k5 and 12k resistors between pins 3, 4 and ground set the output to 8.0 volts. The 1k2 resistor between pins 5 and 6 ensures maximum temperature compensation. The 10 ohm resistor out of pins 2 and 10, limits the short circuit current to about 70 millamps. The eight volt line powers the oscillator, and buffers. It is also the source of the tuning voltage for the two varactors.

The Spectrol Type 534 10-turn 10k linear potentiometer and its Spectrol Model 18-11 Multidial, forms the main tuning function, while a linear 10k potentiometer provides for receiver incremental tuning or RIT.

SW1 allows the RIT to be switched on and off, with a LED to indicate status. The relay is energized only on transmit and disables the RIT irrespective of the position of SW1. This avoids the situation where stations chase each other up and down the band because their 'clarifiers' have been disabled on transmit.

One thing that is rarely stressed, or for that matter mentioned, is that even the best designed and constructed VFOs will not reach their potential for stability and cleanliness, unless they are housed in the right sort of container. Ideally this container should be of metal and have sufficient thermal capacity to iron out short term variations in ambient temperature. It should also be very stiff and non-resonant; ie the sides should not flex when the box is moved about. Such flexure will cause a slight variation in the oscillator frequency.

Luckily all these desirable features are present in the ubiquitous die-cast box. The present design uses an Ecdystone Type 6908P unit. Finally, don't expect the box to do all that it should if the lid is left off. Apart from draughts causing frequency changes there can be more subtle effects. During the development of the VFO module it was found that the 50 Hz field from the equipment on the bench was of sufficient magnitude to cause severe FMing of the oscillator and, even worse, degraded the phase noise performance.

CONSTRUCTION AND TESTING

Board construction is not difficult but it is essential that all components be firmly pulled down to the board. L8 is secured to the board with a 0.75 inch x 0.5 inch (19 mm x 13 mm) piece of stiff insulating material and a NYLON nut and bolt. A suitable insulator is epoxy circuit board material with the copper removed from it. If available, the turns on L8 can be locked in place with a high quality 'Q' dope. Don't use nail varnish because it noticeably reduces the Q of the coil.

Commission the regulator board first and before installing it in the die-cast box, temporarily connect in the two tuning potentiometers. When 12 volts is applied, the voltage at the output pin should be 8.0 volts with a possible variation of 0.2 volts. When the RIT potentiometer is swung through its full 270 degree travel, the voltage on the slider should vary between about 0.5 and 7.5 volts with respect to earth.

Similarly, the slider of the 10-turn potentiometer should vary between 1.5 and 6.5 volts as the potentiometer is wound from one end to the other. If not, adjust RV1 and or RV2 to get close to these values.

Still on the bench, connect up the VFO and apply power. Turn the RIT potentiometer to half travel and measure the VFO frequency at both ends of the travel of the 10 turn potentiometer. This is ideally done using a digital frequency meter, but, failing this, listening on a general coverage receiver will do the job. Adjust RV1 and RV2 again so that the frequency coverage is from just under 2.9 MHz to just over 3.4 MHz.

With the main tuning potentiometer at some central point, move the RIT potentiometer to one end of its travel and measure the frequency, then to the other end of its travel and again measure the frequency, the total change should be about 3 kHz. If the VFO output pins are temporarily terminated with a 50 ohm resistor, the output when measured with the RF

probe as used in Part 2, should be between 0.5 and 0.6 volts.

If the die-cast box has been drilled according to Figure 19, then assembly of the two boards and the other components into it can take place. The writer recommends that the box is rubbed down with steel wool and painted before this assembly takes place. The extra time spent doing this makes the finished project look more professional.

Each of the two boards is mounted on quarter-inch (6 mm) metal standoffs tapped an eighth-inch (3 mm) or whatever else is around the shack that is about this size. The connection between the output pins on the VFO board and the output socket should be done in thin, about eighth-inch (3 mm) coaxial cable, the impedance being unimportant. All other connections are made in normal hook up wire.

Next month's article in *Amateur Radio* will cover Module 7, the heterodyne board and Module 1, the front end board.

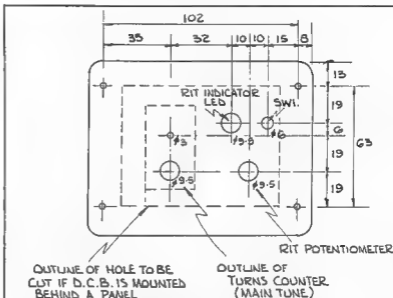


Figure 19: Drilling Detail for Base of 6908P VFO Diecast Box.

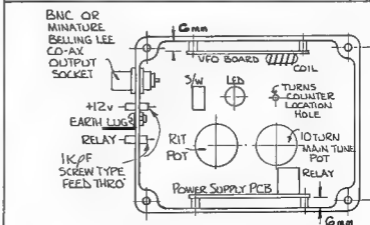


Figure 20: VFO/Power Supply. Placement of components and PCBs in 6908P DCB.

AERIALS: SOME PRACTICAL CONSIDERATIONS — II

SELF-SUPPORTING MASTS AND TOWERS

Ted Roberts VK4QI

38 Bernard Street, Rockhampton North, QLD 4701

SO FAR WE have considered guyed masts, but what of the self-supporting types of masts and towers? They certainly look more professional and there are no problems caused by guy wires when you come to hang that ultimate beam system on top of the structure. They may take a number of forms, from the telegraph pole through to the lattice tower and each does the job efficiently if proper attention is paid to the mechanics of it and correct design safety factors are considered.

In considering the guyed mast, all loads except the downward acting load, due to the mast's own weight and some small load due to the downward acting component of the guy wire tension, are carried by the mast base. All wind and aerial loads are taken by the guy wires and their anchors. It is a completely different ball-game when a self-supporting structure is used.

Consider a mast standing upright and just balanced on the ground. At the first puff of wind the mast would fall down in the direction the wind blows it. From this fact we can deduce several important things. Firstly, the wind exerts a force on the mast, secondly, that the mast has a resistance to the wind or a wind load. If we further consider the position, we find that the harder the wind blows, the quicker our mast falls down. We can further deduce that the wind-loading increases with wind speed. Furthermore, the larger the area offered to a given wind the greater the tendency for our mast to fall down.

WIND LOADING

We now have two factors tending to overturn our mast, firstly the wind velocity, the other the mast area. The wind velocity exerts a pressure on the mast area which increases as the square of the velocity. At a velocity of 50 MPH, the wind exerts a pressure of 6.4 pounds per square foot, but if the velocity is doubled to 100 MPH, the pressure is quadrupled to 25.6 pounds per square foot. If we are designing our own structure we begin by determining the wind velocity we wish to consider a safe maximum. This figure must be reached by considering the known wind patterns over a considerable time for the region where the mast will be erected, taking into consideration any local wind peculiarities.

We therefore calculate the area of the mast, and knowing the wind pressure per unit area at our designed maximum wind velocity, we can determine our total overturning force. Where a circular pipe or rod section is used there is less wind resistance due to its more streamlined shape so a correction factor may be applied to the area calculations. If the area of a circular section is multiplied by the factor of .6, this will compensate for the circular shape. With beam aerials, the area should be calculated, as should the area of the rotator and the rotator extension pipe. The wind load of the mast will act from half the height of the mast. The aerial wind load will act from its height and the combined load for the extension and the rotator will act from halfway up the extension pipe. Thus, if we have a mast area of X square feet multiplied by .6, it will be acting as a lever from

the midpoint of the mast and will exert a force of $(X \times .6)$ pounds $\times H/2$ feet pounds, where X = area of mast in square feet and H = height of the mast in feet. Similarly, the force acting from the rotator/extension will be $X_{rot} \times H + H_{rot}$, where X_{rot} = area of rotator + area of extension and H_{rot} = height of rotator plus height of extension/2.

Forces acting due to the aerial can be found by estimating the aerial area (square root of (side area squared + end area squared)) $\times H_a$, where H_a = height of aerial above ground. Obviously these figures do not leave any margin for safety, so it is usual to multiply these figures by a factor known as the safety factor. The usual safety factor used varies between two and three. If the mast or tower is ready-made, all the necessary calculations of stress and wind loading have already been made by the manufacturer and it only remains to check that they are adequate for local wind conditions.

OVERCOMING WIND LOADING

As we are not guying our mast, it then becomes necessary to find a method of preventing the wind loading from overturning it. At its very simplest, as with our telegraph pole, this overturning force can be resisted by burying some of the mast in the ground and

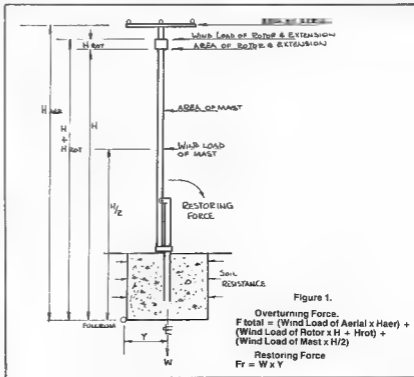
allowing the soil resistance to offer the necessary resistance to the overturning force. But, how deeply do we bury the mast?

In theory this will vary considerably with the nature of the soil in which the mast is erected but a good rule of thumb, used for generations by electric authorities, is to plant the mast for some six feet for a mast up to 30 feet high and one-sixth of its height if above 30 feet high.

Thus, if we want a mast 42 feet high we must begin with a pole 50.4 feet long and bury 8.4 feet in the ground. The same rule applies for concrete light poles. These concrete poles make an attractive looking structure but are expensive and quite heavy. A 17 metre pole weighs some three to three and a half tonnes and would be about 14 metres out of the ground. This would present more than a small problem for a working bee from the club and would be best left to professional erectors, as would the erection of a wooden pole of similar size. It may be possible to do a deal and obtain a second grade concrete pole cheaper and have your electricity authority plant it in your backyard for a nominal cost.

ANOTHER APPROACH TO OVERCOMING WIND LOADING

A different approach can be made, namely, the bottom of the mast, or more realistically, a



supporting post of wood or metal, can be turned in a concrete block. When the mast is raised the position is similar to novelty toys which have a counter-weight in the base and they always right themselves when tipped over (Not that we intend going that far with our mast!!!)

Acting on this concrete block, or counter-weight, we have forces shown in Figure 1. As an overturning force, we have the wind loading of the mast acting as a lever from halfway up the mast plus the wind load of the aerial and rotator, if used, acting as a lever from halfway up the rotator/mast extension and including the wind load of the beam. Opposing this is the dead-weight of the concrete block plus the weight of the mast, rotator and aerial acting vertically through the concrete block. The overturning force acts on a pivot or fulcrum formed by the edge of the counterweight opposite the direction of the wind at any given time. The counterweight acts about the same fulcrum to restore equilibrium or maintain stability in the system and, so long as this force exceeds the overturning force, the mast will remain erect.

Do not overlook that the wind forces will also supply a bending moment to the mast and can actually bend it if construction is too light or flimsy. Therefore, we need good old-fashioned solid construction practices.

Instead of a mast construction, a triangular or square lattice type of tower can be used of course.

ERECTING THE MAST

The mast can be stood up and bolted to posts as described for the guyed mast. However, there is one big difference in the approach to the job. As this is to be a self-supporting structure, there are no guys to assist with the erection. It then becomes necessary to make up temporary ropes or wires guys and take them off where convenient during the actual erection. One convenient difference is the need to get to the top of the mast after erection, so it is simple to remove the temporary guys when the mast is erect. If the mast is bolted in place it then becomes a fixture and, consequently, it is almost imperative to fit pole steps to make it possible to climb to the top to carry out adjustments, etc.

Allowing for the well-known propensities of the younger generation to act adventurously, it is wise to begin the steps at least two and a half metres from the ground. This will then necessitate the use of a ladder to climb to the first step. Treat it safely and do not lead the ladder for the little as to find and use.

At the top of the mast it is suggested to place four steps at the same level with 90 degree spacing and two steps opposite at the next level down. It is sometimes necessary to have two people at the masthead when tilting a beam to the top and it is not comfortable wearing a 15 stone pair of boots on top of your own at that height!

For comfortable climbing, treat the steps as you would the rungs of a ladder. That means, one foot per step up or each step two feet apart on each side. Once again, I emphasise the safety angle - wear hard hats and safety belts when working on or around the mast.

A tall tower can be installed to be a rigid fixture and it will take very little thought to find a means of securing the base. For instance, a heavy base plate on the tower, a couple of heavy hinges, and a bolt inserted into the concrete base which is safely secured with a nut when the mast is erect.

TILTING AND TELESCOPING TOWERS AND MASTS

For sheer luxury and convenience it is hard to go past the tilting and telescoping tower or as a lesser luxury, the telescoping tower. With these

towers comes some control over the forces of Mother Nature as the tower may be telescoped to a lower level when prevailing winds become menacing. In the final chapter, you can tilt the mast and support it horizontally if necessary. In cyclonic conditions don't wait for the full fury of the winds before doing this. It is almost imperative that a tilting tower or mast be telescopic also to reduce the tilting load to manageable proportions, particularly when operating the tower alone. Remember that the stress situation has altered quite a bit from the upright condition when the mast is horizontal. The short section of mast normally below the tilting point is now opposing the main load caused by the upper section of the mast whilst horizontal. This applies a force of weight on the upper section acting from halfway along the mast plus the weight of the rotator and the extension acting from halfway along the extension plus the weight of the aerial acting from the distance of the pivot point to the aerial. These combined forces are all acting on the tilting winch and are quite substantial. Consequently, ensure that the winch, winch cable and mounting system are heavy enough for the job at hand, are substantially mounted, and that the winch and cable are correctly aligned. It is best to follow the manufacturer's instructions when erecting these towers. Failure to do so would render void any claim for faulty materials or workmanship against the suppliers. These suggestions are for guidance only and I do not accept any responsibility for accidents arising from same.

The amateur who has sufficient engineering knowledge to design and build their own lattice tower and base system would not need my advice on how to erect it.

WINCHES AND SAFETY MEASURES

Winches have several flaws in their design and are likely to confound the poor old amateur with their completely unpredictable behaviour at the most inopportune times. Therefore, it is suggested to take suitable restraining

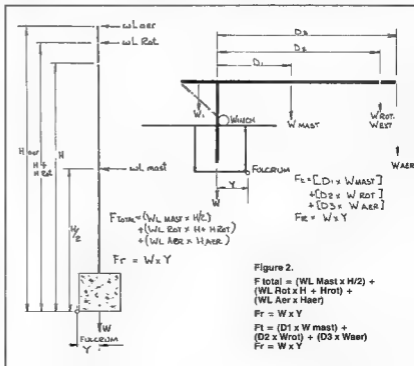
measures with a winch to prevent any minor (or major) disasters occurring.

Winches carry the lifting and tilting loads of the mast/tower and aerial through the winch cables. For this reason it is necessary to choose a cable that is capable of carrying the load with a good safety factor and ensure that the cables are periodically inspected and lubricated. Quite obviously the winch and its mounting are also carrying this load, so the same safety factors should apply to both winch and mounting. The action of the winch pawl should be positive and the pawl system should be greased and a close check made of the pawl spring for rust and corrosion.

A broken or worn pawl on the tilting winch can cause the sudden descent of the mast and, if you are standing in the wrong place you could be driven into the ground like a staple! The same result could be reached if unauthorised people, particularly children attempt to operate the winch. Therefore, take the strain off the winch and cables by building in a locking pin and plate system for both winch systems. Knowing the ability of the junior population to figure out the easiest way to get into the maximum amount of mischief, I suggest that these safety locking pins or plates be, in turn, locked securely with padlocks, keeping the key in the shack and not left hanging on the winch. The extra peace of mind you will find will enable you to concentrate on enjoying QSOs to the fullest.

EFFEL TOWER AND OTHER AWFUL TOWERS

These classic types of towers, which have three or four upright legs and usually are of beautiful aesthetic proportions, are the ultimate in the art of tower design. If you can afford to have one installed at your QTH you are indeed fortunate and sufficiently "well heeled" to have the constructors do all the worrying and calculations involved with laying the foundation concrete blocks, etc.



Windmill towers are in this category and make fine towers for all our purposes. This type of tower also has the same basic design problems as any other self-supporting tower. Wind loads have to be calculated from the area and maximum wind velocity. From these figures, the overturning forces have to be determined, as before. However, the righting force calculations are complicated by the fact that there is one concrete block at the base of each leg.

We will not go into the necessary calculations here as few will be built and the erection firm will take care of the details for those installing one.

CONCRETE SLABS AND BASES

If we study the diagram of the mast with its forces acting upon it, we see that the fulcrum for both overturning and righting forces is located on one edge of the concrete block. Some simple mental arithmetic will show that a deep block of a very small area will be overturned more easily than a shallow block of a wide area. If, however, the block is too shallow it does not supply a great deal of support to the base posts. It is then necessary to consider the shape of the block and a good round style is a cube or maybe a somewhat greater plan area than elevation area. As all stresses and forces are designed around the worst possible case to give ample safety margin, it can be easily seen that it is best to place the mast support in the centre of the block.

The weight necessary to overcome the overturning force at the designed wind velocity must be determined and a safety factor of at least two applied to the result, ie the weight doubled. Knowing that one cubic foot of concrete weighs approximately 140 pounds, or one cubic yard weighs some 3780 pounds, or even one cubic metre weighs some 2235 kg, we can then estimate the amount of concrete needed.

The necessary size of the hole to be excavated can also be calculated.

If you are lucky you may receive assistance from family and/or friends to dig the hole while you are "planning the next step".

Once the hole is there in all its glory, you may decide to make further use of your willing(?) assistants and decide to mix your own concrete. A suitable mix is one part cement, two parts sand, and four parts gravel. It is certainly easier on the labour side to buy the cement ready mixed.

Before the cement is poured install the base posts and hold them plumb with temporary staying timbers or wires until the concrete has set. Heavy steel reinforcing rods can be driven into the sides of the hole to transfer some of the load into the earth and so increase the safety factor. It is also a sign of good practice to build a simple box form at the top of the hole to carry some of the concrete above the ground level. Do not think the concrete is wasted as its weight will still contribute to the righting force, and make a more professional-looking job.

If the mast is to be mounted on a foot plate bolted to the concrete base, a wooden frame can be made using the foot plate as a template, with the mounting bolts fitted to the frame and the frame and bolts supported in the centre of the hole until the concrete sets. The bolts should present a large area to the concrete to prevent pulling-out under strain. This can be done by slipping a length of heavy steel (say 2 x 1/2 inch), drilled at the appropriate centres, over the bolts. Another method is to use heavy lag bolts or to thread lengths of steel rod and bend them at right angles well below surface level.

When the concrete has set it is only necessary to remove the nuts, wooden frame and box frame above ground level. Do not forget to allow at least a week for the concrete to cure before raising the mast.



A Call to all
Holders of a

NOVICE LICENCE

Now you have joined the ranks of
amateur radio, why not extend
your activities?

THE WIRELESS INSTITUTE OF
AUSTRALIA
(N.S.W. DIVISION)

conducts a Bridging Correspondence
Course for the AOCF and LAOCF
Examinations

Throughout the Course, your papers
are checked and commented upon
to lead you to a **SUCCESSFUL
CONCLUSION.**

For further details write to:

THE COURSE SUPERVISOR

W.I.A.

PO BOX 1066

PARRAMATTA, NSW, 2150

(109 Wigram Street, Parramatta)

Phone: (02) 689 2417

11 am to 2 pm M to F and 7 to 9 pm Wed

AR66

W.I.A. WINDBREAKERS

FOR OM's and YL's
Warm, Comfortable &
Machine Washable

Sizes 12-4

NAVY BLUE WITH
WHITE WIA BADGE

**INQUIRE NOW AT
BOOKSHOP
YOUR DIVISIONAL**



QD ELECTRONICS



JOHN MELIA VK3QD

QUALIFIED COMMUNICATIONS
TECHNICIAN
(ENGINEERING)

PROVIDES EXPERT PERSONAL

SERVICE & REPAIRS

AND FAST AUSTRALIA-WIDE

MAIL ORDER SERVICE

AT VERY REASONABLE RATES

SECOND-HAND EQUIPMENT

BOUGHT & SOLD

Manufacturer of

LOTREC RTTY, CW, MODEM
TR560C SOFTWARE

TEL. (03) 751 1231

LOT 7 RIDGE ROAD

MOUNT DANDENONG VIC. 3747.

Parcel Post to

**C/ OLINDA RO. OLINDA VIC
3788**

USSR CALL SIGNS

Jack Wichels W7YF

Secretary, West Washington DX Club

710 Alder Street, Edmonds, Washington, 98020, USA

Many are intrigued by Russia but few know or understand very much about it. Ken Stevens VK5QW, was fortunate enough to attend the North West Pacific DX Convention, in Seattle, Washington at the end of July 1986. Included in the many interesting subjects covered by the Convention was a lecture on Russia, Russian call signs and the way they work, and a coverage of their awards program by Jack Wichels W7YF. Jack has kindly given permission for AR to publish his lecture notes so AR readers may better understand the USSR.

USSR GENERAL INFORMATION

- 1 The land area of the USSR is about two and a half times that of the USA.
- 2 The USSR makes up about one sixth of the total land area of the world.
- 3 The population of the USSR is about 15 percent greater than that of the USA.
- 4 The USSR ranges in latitude (excluding the Arctic islands) from about 35 degrees north in the Turkmen Republic, to about 1900 km from the North Pole at Cape Chelyuskin.
- 5 The USSR contains more different time zones — 11 — than any other country in the world. From Zone 3 in Kaliningrad (UAZF) to Zone 13 in Chukotka (UAKO). The entire USSR is on Daylight Savings Time for the whole year round.
- 6 Parts of the USSR still have extremely low population density. Even the Nationality Okrug UAGH, in Central Siberia, only has an estimated 13 000 population, 44 people per 1000 square miles. By comparison, Alaska had, in 1984, 880 people per 1000 square miles.
- 7 Excluding Mexico and Canada the USSR is the closest country to the USA: 80 km across the Bering Straits, in the middle of which is Big Diomedes Island (USSR), separated from Little Diomedes Island (USA) by the International Date Line and only three kilometres of water.

REPUBLICS OF THE USSR

The various USSR Republics shall be listed first since the USSR call sign system is based on keying the call signs to each of the various Republics.

The USSR — Union of Soviet Socialist Republics — is made up of 15 separate Republics.

- a The RSFSR — Russian Soviet Federated Socialist Republic — is by far the largest of the 15 Republics, comprising 78 percent of the USSR's land area and 54 percent of the USSR's population. The RSFSR might very loosely be described as made up of what may be called "Old Russia" in Europe and "Siberia" in Asia.

b The remaining 14 Republics are these:

- 1 B-Y Ukraine Soviet Socialist Republic, or the Ukraine
- 2 C Byelorussian SSR, or Byelorussia, or White Russia
- 3 D Azerbaijan SSR, or Azerbaijan
- 4 F Georgian SSR, or Georgia
- 5 G Armenian SSR, or Armenia
- 6 H Turkmen SSR, or Turkmen
- 7 I Uzbek SSR, or Uzbek
- 8 J Tadzhik SSR, or Tadzhik
- 9 L Kazakh SSR, or Kazakh
- 10 M Kirghiz SSR, or Kirghiz
- 11 O Moldavian SSR, or Moldavia

- 12 P Lithuanian SSR, or Lithuania
- 13 Q Latvian SSR, or Latvia
- 14 R Estonian SSR, or Estonia

The meaning of the capital letters is explained below.

DXCC COUNTRIES AND CONTINENTAL BOUNDARIES

Each of these 15 USSR Republics counts as a separate DXCC country. The DXCC Countries List shows 19 USSR "countries." Where are the other four?

- a The RSFSR, though a single Republic, is on two continents, Europe and Asia. So the European RSFSR counts as one country and the Asiatic RSFSR counts as the second, and separate, country. We are now up to 16, instead merely 15, countries.
- b Kaliningrad, UA2F (before World War II it was Königsberg, East Prussia, Germany), is politically part of the RSFSR, but is separated (by more than 120 km) geographically by two other USSR Republics, Lithuania and White Russia. So UA2F-land is still another separate DXCC country. Now there are 17 of them!
- c Franz Josef Land, a group of USSR-owned islands in the Arctic Ocean, is more than 360 km from the USSR mainland, so FJL counts as a separate country. . . . 18 countries.
- d USSR stations (4K1) operating from scientific bases on the Antarctic Continent are counted as operating from Antarctica. There are the 19 USSR DXCC "countries."

(Note: Look at a map showing the Azerbaijan Republic part of this Republic — Nakhichevan ASSR. Oblast number 002, is — like Kaliningrad, geographically isolated from its parent Azerbaijan SSR by Armenia. Oblast number 002, however, is not counted as a separate DXCC country, because the separation distance is less than 120 km (DXCC Criteria number 3).)

We may also point out that the USSR political boundary between European RSFSR and Asiatic RSFSR differs from the traditionally accepted geographical boundary between the two continents. The accepted geographical European-Asiatic continental boundary starts at the Arctic Ocean, follows the ridge line of the Ural Mountains, then the Ural River to the Caspian Sea. Politically as well as by call sign area, the USSR defines this continental boundary as being the same as the western boundaries of the UAS call sign area, which are west of the Urals. So for DXCC as well as for AIS-Asian DX Contest, any UAS call sign is on the Asian continent, by definition.

Note, also, that the USSR Republics of Georgia, Azerbaijan, and Armenia are also on the continent of Asia. There can be no argument here, since the Caucasus mountains, which form the northern border of these three Republics, are also the accepted geographical boundary between Europe and Asia.

THERE ARE OBSTALS, AND THEN THERE ARE OBSTALS!

There are 164 different amateur radio regions in the USSR. Each of these, for amateur radio purposes, is called an oblast. These have been assigned discrete numbers, from 001 to 191, as of May 1, 1984, when the current USSR call sign assignment system became effective. There are, no longer, any oblasts with numbers 11, 32, 35, 61, 116, 171 and 172: for various reasons, these seven oblasts were deleted on or before May 1984.

There is a difference between an oblast for amateur radio purposes, and an oblast as used to

define a Soviet political sub-organization. If one looks at a map of the USSR for these oblast QTHs, it will be found that these amateur radio oblasts include not only Soviet (political) oblasts, but also USSR Republics (Moldavia, OBL No 39); Autonomous SSRs, or ASSRs (Tatar ASSR, UA4P; No 94); Krays (Primorye, UA0L, No 107); Autonomous Oblasts, or AOs (Jewish, UA0D, No 111); Nationality Okrugs, or NOs (Koryak, UA0X, No 129); and even merely cities (Moscow, UA3A, No 170). Again, for amateur radio purposes, all of these "things" are called oblasts.

There is good reason to mention the "oblasts versus oblasts" here. For example, if you QSO an amateur whose prefix is UA0X, he may tell you his QTH is in Kamchatka — or he may tell you his QTH is in Koryak. Either way, he is correct. The Koryak NO is a political subdivision of the Kamchatka Oblast. If you really pin him down he will tell you he is in OBL No 129.

When you look at an Oblast List set up in numerical order, you might well wonder how did they get in that particular order. The original list of 170 oblasts were set up in order by the name of the Republic in the Cyrillic, or Russian, alphabet, and then numbered sequentially.

INTERNATIONALLY ASSIGNED RADIO CALL SIGNS FOR THE USSR

International radio call sign blocks are assigned to each world country (and a few International Organizations) by the International Telecommunications Union (ITU) whose headquarters are in Geneva, Switzerland. A reasonably complete and current list of ITU call sign assignment blocks is included on page 125 of the 1986-87 Australian Radio Amateur Call Book.

The ITU call sign block assignments for the USSR are listed below:

EKA-EKZ
EMA-EOZ
ERA-ESZ
EUA-EZZ
LYA-LYZ
RAA-RAA — or any call sign starting with the letter R
UAA-UZZ — or any call sign starting with the letter U
YLA-YLZ
4JA-4LZ

Gaps in the E-series are for call sign blocks assigned to other countries, such as Liberia, Eire, Spain, etc. Likewise, other world countries are assigned blocks beginning with L, Y, and 4.

4K0 — prefixes have been used for stations on floating ice islands in the Arctic Ocean. 4K1 — prefixes are used by USSR stations operating from Antarctica. YL3M was on air from Yeroslavsk, OBL No 160, a few years ago. Several years ago, 4J0BJ was assigned to a special DXpedition on Shikhan Island, in the Kurils.

The USSR has also been a little unusual in occasionally assigning call signs made up of only four letters (no numerals) to amateur stations. RAEM was the call sign assigned to Ernst Krenkel from 1934 until his death in 1971.

UPOG has been the call sign given to Arctic ice island amateur stations, sometimes followed by a number, ie UPOG-22.

To amateurs just beginning to get their feet wet in DX, the message is clear, learn how to use that ITU List in the Call Book. It can answer a lot of questions arising when you hear an unusual call sign.

Warning! Caution! Here comes an in-house, purely arbitrary, "take it or leave it", W7YF definition for the rest of the article to simplify

describing the new USSR call sign assignment system, which went into effect on May 1, 1984.

- 1 "Russian" oblasts will mean any oblasts within the RSFSR only.
- 2 "Other" oblasts will mean any USSR oblasts not within the RSFSR.

IF YOU HEAR A USSR AMATEUR SIGNING HIS CALL, WHERE IS HE LOCATED?

Note. You will note this first description seems to ignore USSR call signs beginning with E, L, Y, and 4. This is correct. They will be discussed later under "Special Call Signs."

If you hear the call sign beginning with R or U, listen to see what the second letter of the call sign is.

- 1 If the second letter is A, N, V, W, or Z, his QTH is in a Russian (see definition above) oblast.
- 2 If the second letter is any other letter, he is in one of the other USSR oblasts (again, see definition above).

IF A RUSSIAN OBLAST, listen for the call sign number and the first letter to the right, or immediately following the number. This key will tell what oblast his QTH is in, by using the Oblast List (see below).

IF IN ONE OF THE OTHER OBLASTS, listen for the two letters immediately before and after the call sign number. Disregard the call sign number itself. These two letters will identify the QTH of this other oblast from the Oblast List.

Refer back to the list of the 14 "other" Republics above for moment. You will see some upper-case, or capital, letters preceding the name of each of the "other" Republics. One of these letters will be the second letter of the call sign — the letter

immediately before the call sign number — and this letter identifies which of the "other" Republics the amateur is located in. The Ukraine is assigned more than one letter, since there are more than 26 separate oblasts making up the Ukraine.

You will also notice when you look over the Oblast List or the Oblast Maps, that there are five of the 15 USSR Republics which do not have any political subdivisions — that is, the whole Republic is a single oblast.

SECOND LETTER

G
O
P
Q
R

REPUBLIC

Armenia
Moldavia
Lithuania
Latvia
Estonia

For each part of these five Republics cited above, you can forget about any other part of the call sign to identify the oblast, since there is but one oblast in each.

Examples

1. UA4HP

The second letter is A, meaning it is a Russian oblast (RSFSR). The number and first letter to the right is 4H. From the Oblast List, this is Kurland, OBL No 133.

2. RW0KA

The second letter is W, again telling you it is a Russian oblast. The number and next letter is 0K. From the Oblast List, this is Chukotka, OBL No 139.

3. UL8GA

The second letter is not one of the Russian oblast letters, so it is in one of the other Republics. The second letter is L, disregard the number; the next letter is G. So the identifying sequence is L-G. On the Oblast List, this is shown as OBL No

190, the city of Alma Ata, in Kazakh

And that is all there is to QTH identification of call signs under the new USSR call sign system. It is even simple and logical.

CLUB CALL SIGNS

In the USSR, in addition to call signs issued to individuals as in the US, there are special uniquely-identified call signs issued to club stations. Club station call signs in the USSR are identified in two different ways, depending on whether the QTH is in the RSFSR or in one of the other Republics.

- 1 IN RUSSIAN OBLASTS, club call signs are identified by the second letter of the call sign, which will always be Z.

Example:

UZ0KAA, a club station in Chukotka, OBL No 139.

- 2 IN OTHER OBLASTS, club call signs are identified by the second letter to the right, or second letter immediately following, the call sign number. This letter will always be either W, X, Y or Z for club stations.

Examples:

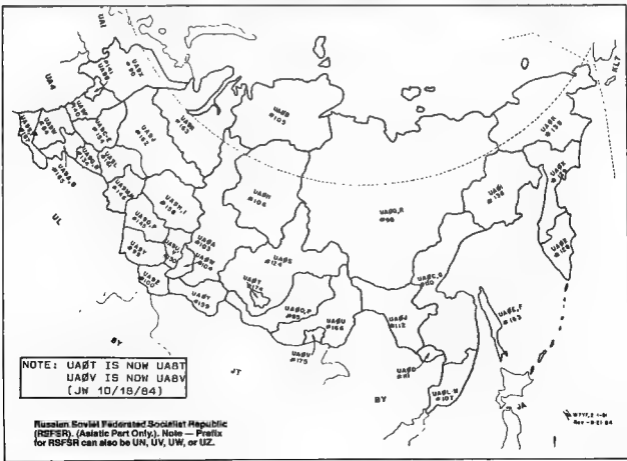
UD2DWA, a club station in Azerbaijan, OBL No 001.

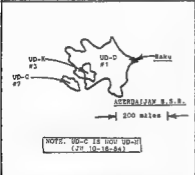
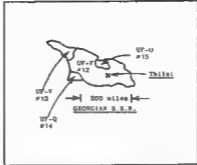
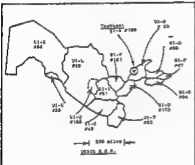
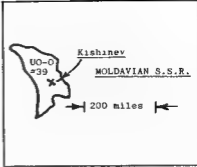
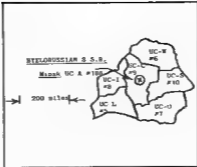
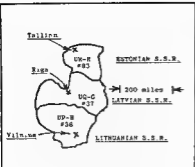
RC1CZB, a club station in Minsk, OBL No 009. The club identifying letters cannot be in the same (second letter of the call sign) location as for Russian oblasts, because the location is reserved for the Republic's ID letter.

Exceptions:

Unfortunately, there are exceptions to this otherwise logical "call sign versus QTH" system.

- 1 "Grandfathered" Call Signs. Five letter call signs which were issued prior to 1971 and





seems to have no inhibitions for frequently assigning special call signs. Fortunately, many such times these special calls seem to more or less fit the system just described.

For example, UOY has been used for DXpeditions to Tuva ASSR (Zone 23) — while there is no second-letter to identify this as a Russian oblast, the OY does fit OBL No 169, Tuva. A couple of years ago, U1ZM and U1ZZ were on air from Murmansk and vicinity — here again, still no second-letter, but otherwise the 1Z was okay for OBL No 143, Murmansk. U4W was on air some time ago from Udmurt, OBL No 095, and it fits the same pattern — no second-letter, but the 4W fits the system.

On the other hand, some special calls do not give much of a clue. U2H was on from Khatyn War Memorial in late 1984. His QSL information indicates Minsk, OBL No 009. I have not been able to pinpoint Khatyn.

The 1984 USSR call sign system appeared, at first, to "go to the dogs" during the Soviet Union's 40th Anniversary of World War II Victory, during which time special call signs came out of the woodwork from all parts of the USSR between January 1 — May 12, 1985. Even here, however, these "Victory" call signs could be tied back into the general call sign

assignment system, once one figured out how to do it.

OBST LIST

The call sign prefixes on this list are shown beginning with the letter U, but keep in mind they can also begin with the letter R — and in some limited cases, E, L, Y or 4.

USSR OBLAST MAPS

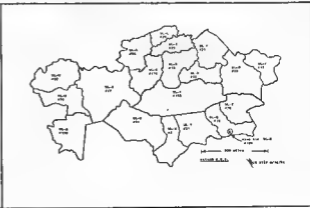
These maps identify and locate the various 184 oblasts on maps of each USSR Republic. Notice the dotted borders on maps for Tadzhik, Kirghiz and Uzbek SSR. Oblasts Nos 183, 184 and 185 are newly created oblasts, and their boundaries were not shown on my map so I had to make a guess at these particular oblast boundaries, thus the dotted line boundaries.

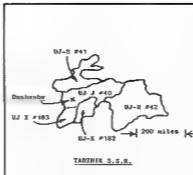
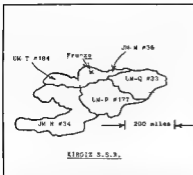
MINOR OBLAST CHANGES ON MAPS

Since first preparing these maps, three oblast identifiers have been changed since May 1, 1984. These changes are noted in small boxes on the appropriate oblast maps.

- 1 UO-C, OBL No 002, has changed to UD-N
- 2 UA07, OBL No 174, has changed to UA87
- 3 UA0V, OBL No 175, has changed to UA8V

which are still in use are not necessarily changed by this new call sign system. Commemorative, or Special Event Call Signs. Some of these special call signs fit into the calls beginning with E, L, Y, or 4, as mentioned previously. The Soviet Union





THE SOVIETS DO CHANGE NAMES OF CITIES

The Soviets do like to change names of cities or towns every so often, to supposedly honour a recently-deceased leader or high official. This may cause a problem sometimes when a USSR amateur tells you his QTH, and it cannot be located on a map — because the name change only took place in the last year or so! Here are a few "old" and "new" names that have taken place over the past several years:

- 1 Rybinsk, in UA3M, is now Andropov
- 2 Izhevsk, in UA4W, is now Ustinov
- 3 Sharypovo, in UA0A, is now Chernenko

ENGLISH-RUSSIAN MORSE CODE ALPHABET EQUIVALENTS

Table one shows these equivalents. The Russian, or Slavic, alphabet — more correctly known as the Cyrillic alphabet — has five more letters than does the English alphabet. I don't rightly know what the average amateur would do with this chart if he

ENGLISH, RUSSIAN & MORSE ALPHABETS

A	А	•••	L	Л	•••••	W	В	•••••
B	Б	•••••	M	М	•••••	X	Х	•••••
C	С	•••••	N	Н	•••••	Y	У	•••••
D	Д	•••••	O	О	•••••	Z	З	•••••
E	Е	•••••	P	П	•••••	-	Ш	•••••
F	Ф	•••••	Q	Ц	•••••	-	Э	•••••
G	Г	•••••	R	Р	•••••	-	Ю	•••••
H	Х	•••••	S	С	•••••	-	Я	•••••
I	И	•••••	T	Т	•••••	-	Ч	•••••
J	Й	•••••	U	У	•••••			
K	К	•••••	V	Х	•••••			

Table 1.

USSR OBLAST LIST

1	UD-D	Adzharia	50	UD-D	Namangan	99	UABY	Altai	146	UAF	Penzenskaya
2	UD-N	Nakhichevan	51	UD-I	Samarkandskaya	100	UABZ	Gorno-Altai Aut.	147	UAJW	Pskovskaya
3	JD-K	Gorno-Karabakh	52	UD-I	Surkham Dainitskaya	101	UABZ	Krasnodar	149	UABL	Rostovskaya
4	UG-G	Armenian	53	UD-B	Tashkentskaya	102	UABY	Adigei Aut.	151	UAAS	Riazanskaya
5	UC-L	Brestskaya	54	UD-B	Ferganskaya	103	UABZ	Krasnoyarsk	152	UAAC	Saratovskaya
6	UC-W	Vitebskaya	55	UD-B	Kharkovskaya	104	UABW	Khakass Aut.	153	UACF	Sverdlovskaya
7	UD-C	Gomelskaya	56	UD-Z	Kara-Kalpak	105	UABH	Taymyrskiy	154	UAAC	Smolenskaya
8	UD-C	Grodenskaya	57	UD-N	Vinnitskaya	106	UABH	Evenkiyskiy	155	UASL	Sverdlovskaya
9	UD-C	Minskaya	58	UD-P	Volinskaya	107	UABH	Primorye	156	UAAA	Vologodskaya
10	UD-S	Mogilevskaya	59	UD-M	Voronezhskaya	108	UABH	Stavropol	157	UADR	Tartobskaya
11	UD-Z	Deleted 1960	60	UD-E	Dnepropetrovskaya	109	UABZ	Karachai-Cherkess	158		
12	UD-F	Georgia	61	UD-B	Deleted 1963	110	UABO	Khabarovsk	159	UABH	Tomskaya
13	JF-V	Abronsan	62	UD-X	Zhitomirskaya	111	UABO	Jewish	160	UABP	Tulyskaya
14	JF-D	Adjar	63	UD-D	Zakarpatskaya	112	UABJ	Amurskaya	161	UABL	Tumen'skaya
15	JF-O	South Ossetia	64	UD-D	Zaporozhskaya	113	UABO	Arhangelskaya	162	UABJ	Khanty-Mansiysk
16	UD-B	Celinohradskaya	65	UD-B	Kirovskaya	114	UABP	Novosibirsk	163	UABK	Yamalo-Nenetskiy
17	UD-B	Actobinskaya	66	UD-B	Kirovogradskaya	115	UABU	Astrakhandskaya	164	UABL	Jeniseyskaya
18	UD-L	Alma-Atinskaya	67	UD-J	Crimskaya	116	UABJ	Deleted 1962	165	UABZ	Cherdynskaya
19	UD-L	East Kazakhstanskaya	68	UD-W	Lvivskaya	117	UABZ	Belgorodskaya	166	UABZ	Orenburgskaya
20	UD-L	Odeskaya	69	UD-Z	Nicolavskaya	118	UABY	Bratskaya	167	UABZ	Yaroslavl'skaya
21	UD-L	Jambuskiy	70	UD-B	Odeskaya	119	UABY	Vladimirovskaya	168	UABZ	Leningrad
22	JU-P	Kazanskaya	71	UD-B	Polkavskaya	120	UABZ	Vologodskaya	169	UABZ	Moscow
23	JU-L	Kazanskaya	72	UD-B	Rovenskaya	121	UABZ	Gorkovskaya	170	UABZ	Deleted 1964
24	JU-K	Kizil-Ordinskaya	73	UD-B	Domskaya	122	UABZ	Krasnodarskaya	171	UABZ	Deleted 1964
25	JU-K	Kochetovskaya	74	UD-B	Ivano-Frankovskaya	123	UABZ	Krasnodarskaya	172	UABZ	Deleted 1964
26	JU-F	Kustanayskaya	75	UD-B	Sumskaya	124	UABZ	Krasnodarskaya	173	JU-O	Sverdlovskaya
27	JU-F	Kustanayskaya	76	UD-B	Temerkenskaya	125	UABZ	Kalmuzhskaya	174	JU-O	Sverdlovskaya
28	JU-F	North Kazakhstanskaya	77	UD-L	Karlovskaya	126	UABZ	Kaluzhskaya	175	UABY	Agnyak-Suriatskiy
29	UD-L	Semipalatinskaya	78	UD-B	Hersenskaya	127	UABZ	Kaluzhskaya	176	UABY	Agnyak-Suriatskiy
30	UD-L	Taldy-Kurganskaya	79	UD-B	Himnitskaya	128	UABZ	Kamchatkaya	177	UABY	Agnyak-Suriatskiy
31	JL-N	Chimkenskaya	80	UD-C	Chernikavskaya	129	UABZ	Karagandinskaya	178	UABY	Agnyak-Suriatskiy
32	JL-N	Deleted 1955	81	UD-B	Chernopetrovskaya	130	UABZ	Kemerovskaya	179	UABY	Agnyak-Suriatskiy
33	UD-Q	Izlyub-Pri-Prievsk	82	UD-B	Chernovitskaya	131	UABZ	Kirovskaya	180	UABY	Agnyak-Suriatskiy
34	UD-N	Oshskaya	83	UD-R	Estonia	132	UABZ	Kirovskaya	181	UABY	Agnyak-Suriatskiy
35	UD-N	Deleted 1955	84	UD-R	Bashkir	133	UABZ	Kirovskaya	182	UABY	Agnyak-Suriatskiy
36	UD-N	Kirovskaya	85	UD-R	Bashkir	134	UABZ	Kirovskaya	183	UABY	Agnyak-Suriatskiy
37	UD-S	Latvia	86	UD-R	Dagestan	135	UABZ	Kirovskaya	184	UABY	Agnyak-Suriatskiy
38	UD-S	Lithuania	87	UD-R	Kabardino-Balkarsk	136	UABZ	Kirovskaya	185	UABY	Agnyak-Suriatskiy
39	UD-Q	Moldavia	88	UD-R	Karelian	137	UABZ	Kirovskaya	186	UABY	Agnyak-Suriatskiy
40	JU-J	Tadzhik	89	UD-R	Kalmyk	138	UABZ	Kirovskaya	187	UABY	Agnyak-Suriatskiy
41	JU-S	Leningrad	90	UD-R	Komi	139	UABZ	Kirovskaya	188	UABY	Agnyak-Suriatskiy
42	JU-S	Gorno-Radakhstan	91	UD-R	Komi	140	UABZ	Kirovskaya	189	UABY	Agnyak-Suriatskiy
43	JU-S	Turkmen	92	UD-R	Mordovia	141	UABZ	Kirovskaya	190	UABY	Agnyak-Suriatskiy
44	JU-S	Maryskaya	93	UD-R	North-Ossetia	142	UABZ	Kirovskaya	191	UABY	Agnyak-Suriatskiy
45	JU-W	Tashkent	94	UD-R	Tatar	143	UABZ	Kirovskaya			
46	JU-W	Chirchikskaya	95	UD-R	Ukrainian	144	UABZ	Kirovskaya			
47	UD-F	Andjanskaya	96	UD-R	Chirchik-Inguish	145	UABZ	Kirovskaya			
48	JU-L	Bukharskaya	97	UD-R	Chirchik	146	UABZ	Kirovskaya			
49	UD-C	Kashkadarskaya	98	UD-R	Yakut	147	UABZ	Kirovskaya			

SPECIAL NOTES TO OBLAST LIST

DELETIONS 11 32, 35, 61, 116, 171, 172
 MISCELLANEOUS UA6A = UA6B, UP-B = UP-P
 UR-R = UR-T
 Call signs may begin with R or U — RI = UI, UZ
 = RZ, UB = RB, etc
 UKRAINE — UB = UT = UY
 RSFSR — UA = UN = UV = UW = UZ
 Call signs issued before 1971 may not follow this pattern.

Club call signs can be identified by a W, X, Y or Z in the second letter following the number.
 The Oblast can be determined by the letter following the number for all Republics, except the RSFSR where the number and following letter are needed.
 Franz Josef Land stations are in Oblast 113 — UA10

does not already read or write in the Russian language!

Using CW when in contact with USSR amateurs, one does run into some three-letter abbreviations of Russian words quite often, and I encourage DXers to use them as appropriate.

DSW means goodbye (pronounced dah see-DAH-neyah)

SPB means thank you (pronounced spah-SEE-bah)

1 From the 1986 World Almanac and Webster's New Geographical Dictionary
 Thanks to Tom Franky K1KI, for his assistance with the current Oblast List. For anyone who wants to keep up-to-date on the latest USSR amateur happenings should get K1KI's USSR Ticker newsletter. Write to Tom at PO Box 62, Limerick, CT. 06035, USA for more information.

ADVERTISE YOURSELF AND/OR YOUR BUSINESS

Amateur Radio has been conducting a new advertising feature for those business people who have a message they want to publicise, yet do not want to place a large advertisement

Send your business card to the Advertising Manager and it will be reproduced in the magazine, one column wide, for \$25.00 per issue

The Editor reserves the right to refuse any material that he considers unsuitable

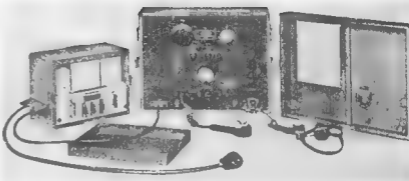
For further details contact:

The Advertising Manager
PO Box 300,
Caulfield South, Vic. 3162

ARMY WIRELESS SETS OF WORLD WAR II

Jim Payne VK3AZT

PO Box 105, Yarra Glen, Vic. 3775



Field Wireless Set, No 109, Mark II.

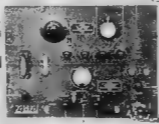
Most 109 sets constructed by Standard Telephones and Cables have a three valve transmitter and a five valve receiver covering 2.5 to 5 MHz. In the transmitter, 4307-A pentodes or 807 "Red Spot" tubes were interchangeable as master oscillator (Colpitts), power amplifier and modulator. In the receiver, 6U7G tubes function as RF and IF amplifiers, 6BK6 as a mixer, 6BE6 combines as second detector, AVC generator (RT only) and audio amplifier while 6J7G is beat note oscillator. In some early models the synchronous vibrator for the receiver power supply is mounted in the receiver while the HT supply for the transmitter is obtained from a synchronous split reed vibrator and filters in the power supply unit. Two alternative types of power units supplying both the transmitter and receiver are provided for later models. In one type the HT supply for the transmitter is obtained from a non-synchronous vibrator operating in conjunction with a selenium rectifier, while in the second type the rectifier unit has four 6X5-GT valves. A six volt 150 AH battery is usually used as the current drain is 2.7 amps on receive and 19.5 amps on transmit.

Power input to the final stage is about 15 watts. The carrying case containing the transmitter and receiver is 650 mm, 420 mm and 255 mm (WHD) and consists of a light steel angle welded framework, to which are welded panels of sheet motor body steel. The detachable lid is drip proof and held rigidly in place by two spring snap-action

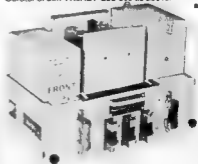
locks. The power unit measuring 370 x 345 x 215 mm is similarly constructed. Both cases are bonderised and finished with a heavy coat of hard stoved defence khaki green enamel. The set weighs 35 kilograms, the power unit 20 kilograms, the six volt battery 30 kgs and the antenna bag, etc. 9.5 kgs.

These sets issued as 109 Mark I, II, II* and II** were used by Australian Signal units in every campaign from 1940 to late 1944, when many were replaced by the 22 set. In the 109 Mark II the power amplifier circuit was keyed and, if the neutralising was not completely effective, a weak carrier was audible at close quarters with the Morse key open when working on WT in the Mark II*, the master oscillator circuit is keyed directly and the back signal is completely eliminated. Certain components of the later models were modified to withstand tropical climates with operating temperatures up to 55 degrees Celsius and relative humidities up to 100 percent. The Marx II** receiver is an improved design with a second 6BE6 valve providing an additional stage of audio amplification.

NOTE The Curator, Royal Australian Corps of Signals Museum, Simpson Barracks, Watsonia, Vic. 3085, wants a 109 set for that museum. If any reader has such a set for sale, or can suggest where one might be available, kindly advise the Curator or Jim VK3AZT address as above.



Transmitter/Receiver Unit, Front View.



Power Unit, Valve Rectifier Type, Removed from Case.

REGISTERED BUILDER
 (DORAZ PTY LTD) TRD
A.J. & J. COMAN

BUILDERS & DESIGNERS OF
 • NEW HOMES • EXTENSIONS
 • RENOVATIONS & ADDITIONS
 • CUSTOM BUILT KITCHENS
 • BATHROOMS • BACK HOF HIRE
 57 BULLA ROAD, BULLA 307 1392



WHAT IS THIS THING CALLED AMTOR?

S E Molen VK2SG

13 Pendle Way, Pendle Hill, NSW. 2145

From time to time, readers may have heard of AMTOR. What does the name indicate?

There are two versions, one is **AM**ateur Teletypewriter Over Radio, the other is **Am**ateur Microprocessor Teletypewriter Over Radio. It is also known in the commercial field as the **ARQ** (Automatic Request Query), **FEC** (Forward Error Correction) or **TOR** (Teletypewriter Over Radio) system. It is interesting to note that the amateur system will marry the commercial system, as both systems are designed to follow the CCIR (International Radio Consultative Committee) recommendation 476, and therefore follow exactly the same parameters.

The AMTOR code consists of the normal 26 characters of the alphabet, plus carriage return, line feed, figure case and letter case, the same as the normal RTTY signal, plus three extra characters used as control characters, these are designated as **RO**, **Alpha** and **Beta**. The **RO** signal is used as the request query and also in the original calling signal. **Beta** is used as an idle signal (when no traffic is flowing) and the **Alpha** is used as part of the hand over signal. Each character in the AMTOR Code consists of three lows and four highs, or three 000 and four 1111, or three marks and four spaces. The various arrangements of these highs and lows are all that the AMTOR system will accept. (Refer to AMTOR Codes, Table 1). The code is not compatible with either Baudot or ASCII. The actual transmitted signal is 100 Bauds, but the prime speed remains at 45 or 50 Bauds, whichever is selected.

Basically, there are three modes of operation:

- 1 Mode A — which is the automatic or **ARO** mode
- 2 Mode B — or broadcast mode called **FEC**
- 3 Mode L — or listen mode (in this mode there are no transmission facilities)

In mode A only two stations can communicate with each other. The originating station is called the **Master** or **ISS** (Information Sending Station), the called or receiving station is called the **Slave** or **IRS** (Information Receiving Station). The master station remains the master throughout the whole contact irrespective of which station is transmitting at any time, and as master, controls the timing of the whole system.

In mode A operation the **ISS** (Information Sending Station) transmits three characters in 210 milliseconds, then goes to receive for 240 milliseconds, during the receive period the system looks for a logic reply from the **IRS** to indicate that the three characters have been received correctly, if the correct reply is received the **ISS** then proceeds with the next three characters, but if there has been an error in the reception at either end the last three characters are repeated until such time as they are received correctly. Both stations only acknowledge receipt of the correct logic signal

NO	LETTER	FIGURES	7-UNIT CODE
1	A	-	BBBYYB
2	B	?	YBYYBB
3	C	:	YBBBYY
4	D		BBYYBB
5	E	3	YBBYBB
6	F		BBYBBY
7	G		BYBBYY
8	H		BYBBYB
9	I	8	BBBYYB
10	J	audible	BBBYYB
11	K	(YBBBYY
12	L)	BYBBYB
13	M	-	BYBBYY
14	N	.	BYBBYB
15	O	9	BYYYBB
16	P	0	BBBYYB
17	Q	1	YBBBYY
18	R	4	BYBBYB
19	S		BBYYBB
20	T	5	YBYYBB
21	U	7	YBBBYY
22	V	2	BBBYYB
23	W		BBYYBB
24	X	/	YBYYBB
25	Y	6	BBYYBB
26	Z	+	BBYYBB
27	carriage return		BBYYBB
28	line feed		YBYYBB
29	letter shift		YBYYBB
30	figure shift		YBYYBB
31	space		YBYYBB
32	unperforated tape		YBYYBB
	- control signal 1		BYYYBB
	- control signal 2		YBYYBB
	- control signal 3		BYYYBB
	- idle signal beta		BBBYYB
	- idle signal alpha		BBBYYB
	- signal repetition		YBYYBB

AMTOR Codes: Table 1.

consisting of the 3/4 ratio, all other signals are treated as errors and are not printed. Therefore, interference, static, etc does not cause misprints but only causes a slowing down of the traffic flow between the two stations, without any loss of traffic.

On completion of traffic in one direction an automatic changeover takes place by the sending station (**ISS**) transmitting +? (plus question-mark) when this is acknowledged by the receiving station (**IRS**) a change of direction of traffic takes place, and the slave station is now the transmitting station (but is not the master). In the event of a loss of signal for 15 seconds, the master station will then resume command and start calling the slave station, as it did at the start of the contact. When contact is re-established, the flow of traffic will

continue as though nothing had happened, so that if the slave station was the transmitting station at the time of loss of signal, then the slave station will resume sending traffic from exactly where it left off, and the master station automatically returns to the receiving situation.

With Mode A, there is the availability of complete break-in, so that if the transmitting station asks a question, the receiving station can immediately break in to reply, finishing his reply with +?, the original transmitting station carries on with his traffic as though there has been no interruption, but the reply has been printed in the middle of his outward traffic. This feature is very handy for quick question and answer, and saves a lot of time under some circumstances. A further feature of Mode A is that, on start-up (swtch only) you insert your call sign, which must consist of four characters only, thus **VK2SG** would become **VKSG** and **VK2RT** would become **VKRT**, but **VK2BVE** would become **BVE**, it is the usual practice to use the first character and the last three characters of your call sign, there are some exceptions to this, such as the countries that have figures in their call sign; eg **9M2CR** who uses the call sign **NMCR**. On entering the four characters, your system is now on standby (seical) and may be left in this state indefinitely, as it will not operate unless it receives your designated call sign (seical). As soon as it detects your call sign it will start to reply to the calling station as though you were present, and will receive any message sent to it. The sending station, upon receiving the correct reply, will then be able to send traffic to you, and know that you have received it correctly, because you have given all the correct replies. There is another feature that can be used at this time, and that is the delayed copy, this is a delay of your transmitted message that is not printed at the transmitting and of the circuit until the correct reply (control character) is received, and then it is printed. In this way, you not only know that you have sent the traffic, but you can see that the receiving station has received it correctly.

While you are in stand by, any other station may operate on the frequency without disturbing your system, because your system will only activate on your call sign, and not any other. Similarly, you may call another station's equipment by inserting their call sign into the Mode A facility. As soon as the call sign is entered, your system will start calling that station, and will start looking for a reply; as soon as it receives a reply, it will then go into traffic mode, and if you have any traffic to send, you may now proceed. At this point, both the transmitting and the receiving station may start to load their buffers, or should one, say pre-load, their buffers with up to 1024 characters (16 lines) and these characters will flow out at normal

Mode A does have one disadvantage, and that is distance. Because the radio waves travel at 300 km per millisecond, there is a time delay between the time the signal is sent and the time that it is received at a distant point; as we have to wait for a reply from the distant station there is a further delay on the return path. If one considers a station, say 18 000 km away, the signal and the reply has to travel 36 000 km which will take 120 milliseconds on a direct path. To this we must add the 70 millisecond reply control character which brings us up to 190 milliseconds. Unfortunately, there are several other delays to be considered. Firstly, there is the delay of the transceiver, that is the time taken to go from receive to transmit at half power. This is usually in the order of 15 to 20 milliseconds, so we now have to add another 40 milliseconds to our delay time which brings us to 230 milliseconds. The path of the radio waves is not a direct line but a trip to the ionosphere and back. This takes more time, so that in the end we see that there is not enough time in receive to receive the full correct control character before we go back to transmit. It therefore becomes apparent the path length has a great bearing on the Mode A communication.

By speeding up the switching time of the transceiver, (refer Note 1), both from receive to transmit, and from transmit to receive, and if one could get the switching speed down to about two or three milliseconds, then the long path to Europe would be possible, provided that you can find a station in Europe that can operate at the same speed. Inversely, the short path to Europe presents very little problems as Australia is concerned as it is short enough to be able to operate Mode A with ease. The usual way to operate the transceiver is in the break-in mode with the AGC switched off. If it is still slow, then you might have to do

some work inside the transceiver to eradicate some of the delays that are in-built. In actual fact, the delays of the transceiver will only be detrimental to the long haul signals, as, in the main, local contacts would be fairly easy unless you run into a very fast transceiver. The accuracy of Mode A may be judged by the following when compared with normal RTTY.

NORMAL RTTY	AMTOR
100 percent	100 percent
90 percent	99.9 percent
80 percent	99.8 percent
70 percent	99.7 percent
60 percent	99.5 percent
50 percent	99.2 percent
40 percent	98.8 percent
30 percent	98.2 percent

On the worst case shown, the traffic transfer speed will have dropped from 60 WPM to approximately 50 WPM, but still with almost complete accuracy.

With Mode B, or broadcast mode (FEC), we have operating conditions that are similar to normal RTTY, that is, key down all the time with no breaks. In this mode, we are again using the 3/4 ratio of the digital code so the receiving station still has the same logic letters to look for, and will therefore only accept correct logic, but as there is no check-back with the sending station, and therefore no possibility of detecting an incorrect letter, each character is sent twice but spaced 350 milliseconds apart. This spacing is used to allow time for static burst, car ignition, etc., and therefore removes some of the possibility of both letters being mutilated by one burst of static, etc.

The receiving station looks at the two characters, if both are correct logic it will only print one of them, but if there is a mutilation of either character, it will delete the incorrect logic character and print the correct logic character. If both characters are mutilated, and this can happen, it will then not print either but will leave a space where the character should be, therefore you are not getting garbled print, rather correct characters with letters missing. The sending speed is again 100 Bauds and the speed of the printer is 45 or 50 Bauds, whichever you have selected. The transmitted procedure is as follows:
A B C D A E F G D H E I F J G etc.

If you are typing at 45 Bauds there will be times where the transmitted message is ahead of the typed message. At this point, idle signals are automatically inserted, so that the receiving station may have a look at the correct phasing of the signal and make adjustments inside the system that may be necessary. There will be times when the signal is not good enough for a perfect print and therefore errors will creep in, in Mode B, this mode is not as accurate as Mode A but is a great improvement on normal RTTY. The handover in this mode is a mechanical operation and the operator has to make the changeover. It is not an automatic function as with Mode A.

Mode L is a listen mode only and has no transmit facility. It is purely intended to look at the operation of other stations in Mode A and Mode B, with Mode L you can look at both Mode A and B. The accuracy of this mode is no better than normal RTTY; as it is not an operating mode it is of no consequence.

NOTE 1:

ANARF (Australian National Amateur Radio Teleprinter Society) has a list of switching speed modifications for 41 transceivers. For further information, write to: Box 860, Crowes Nest, NSW and please include a suitable stamped addressed return envelope.

Parasitic Beam Program for the Microbee

Karl Saville VK5AHK

2 Wood Street, Lobethal, SA. 5241

The following program is translated from the Parasitic Beam Program for the Commodore 64 by Joseph Ortuso VK7NJO, in June 1986 issue of Amateur Radio.

The Microbee program is not a direct conversion to the Commodore one and, because of the difference between the two basics, I have approached the solution in a slightly different way and the Read-out format is arranged differently.

However, I must thank VK7NJO for presenting a very interesting program which has given me some pleasure in converting it for the Microbee.

The program has been checked out over the range of 14 to 432 MHz against data for three element beams, in the 1979 *Radio Amateur's Handbook*, and the results compare favourably.

The program requires two inputs: Frequency and Spacing of the elements. The latter spacing input gives common to all elements.

The Read-out gives the lengths of the driven, reflector and director elements, in both feet and metres and also gives the approximate radiation resistance.

```

00100 REM: A program to calculate
       dimensions for a 3 element parasitic
       beam, for the Microbee, by H K
       Saville VK5AHK 1986
00110 CLS:CURS 20,1 PRINT:"Parasitic
       Beam Program":CURS
       20,2 PRINT[A22 61]
00120 CURS 1,4:PRINT "Use 1.5 in OD
       tubing for 14 MHz and 1 in for 21 and
       above"
00130 CURS 1,5:PRINT "The forward gain
       for various spacings is between 7.5
       and 8 dB"
00140 CURS 1,6:PRINT[A62 45]
00150 CURS 1,9:INPUT "Which frequency
       (MHz):" F1
00160 CURS 1,10:PRINT "Which
       spacing": INPUT S1
00170 D1=435+((S1-0.1)*150):D2=D1/F1
00180 R1=480+((S1-0.1)*120):R2=R1/F1
00190 A1=475+((S1-0.1)*50):A2=A1/F1
00200 H1=15+((S1-0.1)*40)
00210 W1=30000/F1
00220 W2=W1*S1/100
00230 W3=W1*S1/100/305
00240 CLS:X1=0.305:A3=A2*X1 D3=D-
       2*X1 R3=R2*X1
00250 CURS 24,1:PRINT"ELEMENT
       LENGTH":CURS 24,2:PRINT[A14
       45]
00260 CURS 10,4:PRINT "For ":"F1:"MHz
       and ":"S1:" of wavelength
       spacing":CURS 10,5:PRINT[A46 45]
00270 CURS 10,6:PRINT "Driven El ":"[F8.2
       A2]:" ft or ":"[F8.2 A3]:" m"

```

```

00280 CURS 10,7:PRINT"Director ":"[F8.2
       D2]:" ft or ":"[F8.2 D3]:" m"
00290 CURS 10,8:PRINT"Reflector ":"[F8.2
       R2]:" ft or ":"[F8.2 R3]:" m"
00300 CURS 10,9:PRINT"The spacing is:
       ":"[F8.2 W3]:" ft or ":"[F8.2 W2]:" m"
00310 CURS 10,10:PRINT"Radiation
       resistance is approx mately
       ":"H1:"Ohms"
00320 CURS 10,11:PRINT[A48 45]
00330 CURS 1,15:PRINT"Would you like
       to compute again, Y or N?"
00340 ZOS=KEY$ IF ZOS=" " THEN 340
00350 IF ZOS="Y" OR ZOS="y" THEN 100
       ELSE END

```

Parasitic Beam Program
Use 1.5 in OD tubing for 14 MHz and 1 in for 21 and above
The forward gain for various spacing is between 7.5 and 8 dB

Which frequency (MHz) 28.25
Which spacing? 175

ELEMENT LENGTH
For 28.25 MHz and 0.175 of wavelength spacing

Driven El	16.68 ft	or	5.08 mt
Director	15.79 ft	or	4.81 mt
Reflector	17.30 ft	or	5.27 mt
The spacing is	6.09 ft	or	1.85 mt

Radiation resistance is approximately 45 ohms
Would you like to compute again Y or N?

NOT A RESCUE, BUT —?

Harry Atkinson VK6WZ

5/97 Railway Parade, Mount Lawley, WA. 6050

The way some people put to sea in small craft these days you'd think they had a whole team of guardian angels looking after them.

While those engaged in the call-backs on VHF and the other HF relays after the broadcast remained unaware of the possible drama going on up at Dugong River, Don and Ron were exchanging reports and arranging schedules for later in the day. Ron gave his position as 123° 51'E, 18° 37'S.

Despite a fear of leaking fuel and the onset of a period of illness, Ron and his first mate made it out from the river into the open sea and moved slowly and cautiously homeward. VK6UF expressed his heartfelt thanks to Don and others on the frequency who stood by in case rescue procedures had to be set in motion.

Recalling the incident Ron says there is no substitute for radio — particularly amateur radio — when away miles from anywhere and anyone. There is also no substitute for knowing where you are going and having on hand everything you are likely to need, no matter what the ultimate outcome.

It was not a rescue, but —? What if — no chart of the area, no hull repair outfit, no radio?

or



First Low Tide — PM Saturday.

Ron Dent VK6UF, however, is not like that.

On Saturday, March 14, Ron and his 17½-year-old 'first mate' set off in their 5.2 metre runabout *Arjay* for a fishing and camping weekend at Ron's favourite 'barra' spot, up river from Dugong Bay.

This spot is about 45 km from Ron's home and saltmine, Koonan Island right up at the 'top end' of Western Australia. And here's what *Arjay* had on board that March morning in addition to its human cargo.

A 65 hp main engine, a 6.5 hp emergency motor, food, water, fishing tackle, red and orange flares (both smoke and parachute type) and adequate fuel. A "crocodile dissuader" (44 calibre magnum with 100 rounds of hv hollow-nosed ammunition), TS-430S transceiver, AT-300 tuner, 27 MHz AM marine band radio with 11 foot wh/p. RDF beacon (water activates) four life jackets, solar panels for emergency power and a hull repair outfit.

After an initial loss of 45 minutes — due to cleaning fuel line filter and fuel pump because of a decision — wise as it turned out — to run on the 60 litres of emergency fuel for starters, petrol which turned out to be like some wine over the hill — the intrepid duo set off. But not to worry. The main tanks held 120 litres and even if the remainder of the emergency 60 stayed on just for the ride as dead weight, there was 40 more litres stowed away at the campsite.

Motoring along at 25 knots, they reached the mouth of the river at 1030 hours and, while waiting for the tide to rise and fill the creek with navigable water, settled themselves a small barra (weight 4 kg). An hour or so later, they were settling up camp.

Finally the boat was moored and the tide going out at 1700 hours. They felt they were in for a good weekend of fishing in the rock pools along the river bed. With *Arjay* gently settled at her moorings, the pair went walking along the river bed and brought back to camp eventually another barramundi and a couple of rock cod — a total of 18 kg! The evening meal and listening to the night sounds — fish jumping and crocodiles barking — filled the time to lights out with a plan to be up bright and early next morning, for more fishing on the next low tide. Ron got up during the night and, by light of the full moon, with no wind and a balmy 25 degrees Celsius temperature, satisfied himself that all was well with boat and crew.

However, at daybreak, *Arjay* was high and dry on the rocky bed with its side hard against the bank and at an angle which placed the pressure of the boat's weight not on the keel — the thickest and strongest part of the hull — but on the forward gunwale, the thinnest part. As a consequence, there was a 150 cm crack below the water line, but above the flotation tanks.

However, says Ron, no worry. Good old epoxy and five minutes work and all was 100 percent again. But would *Arjay* at that angle cope with the next incoming tide? It was then that the TS-430S came into play. Shortly before 9.30 WA-time on Sunday the 15th, VK6UF called Don VK6HK, on 14.110 MHz during the test period prior to the VK6 WIA News Relay. Would Don stand by for the next few hours while the campers waited for the noon tide to get them afloat and on their way home?

Of course he would, said Don. And so the time passed while the WIA Bulletin went to air



Second Low Tide — AM Sunday, looking upstream.

SOLAR CELL

Sanyo of Japan, has developed the world's first translucent amorphous solar cell.

An exclusive cell structure and patterning technology allows natural light filtration and simultaneous generation of electric power from solar energy.

Sanyo says it can be used for a wide range of applications including home and motor vehicle windows, skylights, also outdoor and indoor artificial greenhouses.

DEVOLVEMENT OF EXAMINATIONS

SUBMISSION FROM THE WIRELESS INSTITUTE OF AUSTRALIA

1 INTRODUCTION

The Wireless Institute of Australia is the national body which represents the interests of all amateur radio operators throughout Australia. It has members in all States, in remote as well as urban areas, who have between them a vast reserve of expertise in practical, technical, educational and administrative fields and a reputation for willingness to assist the newcomers to the hobby.

The Institute is very aware of the need for present and future amateurs to have equal access to examinations whatever their location, available time or other constraints, and to have examination costs kept to a minimum.

Discussion at the Federal Convention re-emphasised these issues raised in the Institute's Interim Submission, and stressed the desirability of a uniform examination standard for candidates throughout Australia. This uniform standard has been traditionally maintained by examinations administered by a single body, the Department of Communications. It is the Institute's opinion that the single controlling body system should be retained.

2 REQUEST FOR ACCREDITATION

The Wireless Institute of Australia (WIA) requests that the Department of Communications (DOC) accredit it as the sole examining authority for Amateur Operator Certificates of Proficiency.

The Wireless Institute of Australia is the only body concerned with amateur examinations which has representatives in all States and a widespread network of willing assistants throughout the nation. Because of its close liaison with DOC over many years, the Institute has a good understanding of the problems involved in the present examination system, and the requirements of any future system.

The assumption of control over the examination system does not preclude other bodies, WIA Divisions, clubs, educational establishments or individuals, from arranging and managing examinations as required using materials prepared and supplied by the Institute's Examination Officer.

The Institute expects, as the examining body, to reserve the right to delegate or contract out the preparation of examination materials as required.

In this way, the most efficient use can be made of the vast reserve of expertise available within the membership.

3 REQUEST FOR ACCESS TO EXISTING EXAMINATION MATERIALS

The Institute requests access to the existing DOC question banks and the programs for computer generation of examination papers and Morse code examination tapes.

These items are needed as a starting point for the Institute's examination materials so that the existing standard can be maintained. The first few papers produced by the Institute should comprise at least 80 percent existing questions, and the tapes should continue to be produced from the existing program.

Review of the existing questions by the Examinations Committee will establish the pattern and level for future additions to the banks.

4 REQUEST FOR A TRANSITION PERIOD

The Institute requests that a transition period of at least 16 months be allowed so that it can fully develop the required infrastructure and procedures.

It is suggested that during this period the Institute will first assume responsibility for supervision of examinations, gradually moving into preparation and distribution of examination materials to a mutually agreed timetable.

5 THE INSTITUTE'S RESOURCES

The major resource of the Institute is the experience, expertise, equipment and enthusiasm of its members.

The membership includes theoretical and practical engineers, able to produce and critique questions, experienced and practicing educators capable of validating and evaluating questions, computer experts to produce or maintain the necessary programs, and administrators with experience of both public and private industry.

Expert advice can be obtained from within the membership on all aspects of the establishment of an Examinations Section. Assistance will be forthcoming from experienced personnel for the production of questions and the preparation and assessment of Morse code tapes.

Nevertheless it is not intended that the Institute will rely on volunteer labour for the whole of the examination program.

(a) Physical resources

The Executive has agreed to provide the necessary office and associated equipment to enable the establishment of an efficient Examinations Section separate from the Executive.

(b) Human resources

The Institute was directed by the Federal Convention to employ an Examinations Officer once accreditation is received, so that examination procedures can be established rapidly and an effective system developed. This position is seen as handling the production and distribution of examination materials, marking papers and tapes, notifying results and maintaining records of individual candidate status.

A number of members have already indicated their interest in joining the Committee to assist the Examinations Officer by producing appropriate materials such as study guides, and multi-choice questions. The wide geographic distribution of Institute members willing to assist with examination arrangements will ensure that candidates throughout Australia have access to examinations as required.

6 THE INSTITUTE'S INTENTIONS

On being granted accreditation the Institute will proceed to carry out the directions of the Federal Convention with regard to:

- a) Employing an Examinations Co-ordinator;
- b) Establishing an Examinations Committee to:
 1. Finalise approval and publication of a NAACP Study Guide
 2. Prepare a draft AACP Study Guide to accompany the ACP/ALCP Syllabus, submit it to DOC for approval and subsequently publish it.

3. Review the existing question banks and amend as required
4. Extend the existing question question bank by adding new approved questions
5. Enter the extended question bank into an appropriate computer
6. Develop a suitable computer program to select questions from the bank for an examination paper as required
7. Publish a sample question paper from the bank at each level annually.

It is also intended to:

- c) establish communications with groups or individuals likely to desire to conduct examinations, with a view to developing a protocol
- d) appoint members in Divisions, clubs or other bodies to be responsible for the local arrangements for examinations.
- e) arrange publication of the procedures required for entry to WIA controlled examinations
- f) when the question bank reaches approximately 1000 questions at each level, publish the bank and make provision for update and review as necessary. Similar arrangements will apply for the Regulations questions, but a bank of 300 questions should suffice.

7 OUTLINE OF PROPOSED EXAMINATIONS SYSTEM

The Institute sees two components to be requirements for establishing an examinations system:

- a. The "Central Office" component which deals with the preparation and distribution of examination materials, their return for marking, the distribution of results and maintenance of records
- b. The "Field Staff" who assume responsibility for the local arrangements when an examination is required or scheduled in a particular area. These members would arrange a suitable time and venue and an appropriate invigilator, who would receive the papers or tapes, supervise the examination, and return papers or tapes to the "Central Office". Responses so far received allow the Institute to be confident that sufficient volunteer "Field Staff" will be forthcoming for examinations to be conducted at the current frequency but at an increased number of centres. The necessity for proposed dates of local examinations to be advertised in advance has also been foreseen.

8 PRIORITIES

Of the intentions listed in Paragraph 6, the Institute sees the priorities as in order:

- (a) Establishing the committee
- (b) Finalising the NAACP Study Guide
- (c) Preparing the ACP/ALCP Study Guide
- (d) On receiving accreditation
 - i) employing a suitable Examinations Officer,
 - ii) establishing the network of Field Co-ordinators,
 - iii) establishing a system for production of examination materials,

- iv devising and publishing procedures for examination entry and conduct.
- (e) On receiving access to the question bank
- reviewing it to maintain the standard,
 - collecting and reviewing new questions for addition to the bank,
 - publishing sample examination papers and tapes.
- (f) Publishing the question bank

Progress so far:

Steps have already been taken to establish an Examinations Committee with the current brief to finalise the production of the NAACP Study Guide and to proceed with producing an agreed AACP Study Guide.

Members of this committee are those who have expressed interest and concern regarding the development proposals and willingness to take an active part in the proposed activities.

All have a history of association with Novice or AACP courses and examinations and several have both qualifications and experience in teaching and educational administration.

The group is also anxious to review the existing question bank if the Institute is granted access to it, and to produce and validate new questions.

A computer program for selection of questions from a computerised bank according to the existing distribution formula has already been offered to the Institute.

9 PROPOSED TIME SCALE

It is expected that by the end of July 1987, the committee will be in communication and the NAACP Study Guide should be approved and ready for publication.

Although it is not likely that the AACP Study Guide will be completed before about March 1988, an effort will be made to have a draft available for discussion by the end of 1987.

The Institute considers that a phasing-in period of at least 18 months from the date of accreditation will be necessary to allow development of an efficient and effective system.

During that period, the Institute will organise the Field Co-ordinators, and will undertake to arrange examinations as required using materials supplied by the Department.

By the end of 1988, the Committee should have produced and approved a bank of 500 questions for use at each level.

10 SUMMARY

In its 75 years of representing the interests of radio amateurs, the Wireless Institute of Australia has consistently upheld the principle of self-regulation of the Amateur Service.

The Institute believes it is ideally equipped to further assist the development of this Service in Australia by accepting the responsibility for conducting examinations for Amateur Operator Certificates of Proficiency.

It is the Institute's considered opinion that, in view of the Department's stated intention to devolve responsibility for amateur examinations, present and future amateurs can best be served by the WIA being accredited as the sole examining authority.

June 9, 1987

Federal Executive
Wireless Institute of Australia



PRICE: \$130

Post Paid within Australia

LODESTAR

First shipment sold out

A PRECISION DIP METER
with a frequency range of 1.5 to 250 MHz in six ranges, with plug-in coils.

Full specifications available.

A NECESSARY ADJUNCT TO ANY AMATEURS TEST EQUIPMENT

WILLIAM WILLIS & Co. Pty. Ltd.
98 Canterbury Road, Canterbury, Vic. 3128
PHONE (03) 836 0707

For further information regarding Devolvement of Examinations, see Education Notes, this issue.

SUBSCRIPTION OFFER SPECIAL BONUS GIFT!

SUBSCRIBE NOW!

You'll receive 12 issues of Electronics Today International delivered post free to your home or office and a free UBD Directory for your area* for only \$35.40. Simply fill in the details opposite to take advantage of this special offer.

*NSW, VIC, QLD, WA indicate Capital City or State directory. NT will receive Touring Guide and Local Map. TAS will receive State Directory. SA will receive an Adelaide Street Directory & State Touring Guide.

August ETI blows the lid of the 'Stealth Aircraft Mystery'. Does it really exist? In addition we:

- Review the NAD 6300 cassette player
- Investigate the Seoul Olympics
- Give you a practical introduction to Radar and show you how to build the ETI 184 In-Circuit Digital IC Tester
- ETI-179 Analogue Breadboard
- ETI-612 Audio Test Set

YES! Please send me this special offer of 12 issues of Electronics Today International (one each month) along with my free UBD directory, NSW, VIC, QLD, WA. Please indicate

Capital City ☐ or ☐ Country Directory

☐ I enclose my cheque/money order

(with this form in an envelope) for \$

I make cheques payable to: The Federal Publishing Co. P/L.

Charge by ☐ Bankcard ☐ Mastercard

\$1500. American Express ☐ Visa with \$

(50% Discount for orders of 6 or more)

Card No.

Expiry Date /

Signature

(unsigned orders cannot be accepted)

Mail Post Free in Australia to

Freeport No. 4
The Federal Publishing Company
P.O. Box 227 Waterloo, N.S.W. 2017

Name

Mr/Mrs/Ms/Ms

Initial

Surname

Address

Post Code

Date of Order / / Telephone ()



BUILD:
• SUPER BREADBOARD
• IN-CIRCUIT IC TESTER
• TEST SET FOR AUDIO EQUIPMENT

AMATEUR RADIO IN AN EMERGENCY SITUATION —

1929

The VK3RJ Story

Maurie Milani VK3CWB
PO Box 2742, Mildura, Vic. 3500

This is a factual, historical story about one of Australia's amateur radio pioneers, the late Ray Jones VK3RJ. The article has taken 18 months to research, with Ray providing much of the information, however Ray passed away at the end of May unfortunately not seeing the labours come to fruition. It was to be a tribute to Ray but now becomes his Obituary. Vale Ray Jones VK3RJ.

During this time he was stationed at RAAF Headquarters, No 2 Training Group Headquarters, Eastern Area Headquarters and North Western Area Headquarters. In 1945, he returned to the PMG where he remained until his retirement in 1960.

In passing, Ray quickly mentioned that his amateur radio station assisted the PMG in a time of crisis. His radio was used as a means of passing telegraphic traffic (it later discovered that there were in fact five occasions when his radio station was used). What happened was when normal telegraphic links could not pass the traffic Ray made his amateur station available to the PMG in order to have the traffic passed to the required destination.

The story goes something like this. In April 1929, torrential rains for several days caused intense flooding in central Tasmania. As a result, all rail, road and communication links (including telephone) between the north and south of the State were cut off for at least four days. Ray was working at the Melbourne CTO as a telegraphist when the news came to hand. All lines between Launceston and Hobart had been swept away by the floods with the north and south of the State basically being isolated. The real problem lay with Hobart which was totally cut off from the mainland — Launceston still had these links.

Ray stated: "I immediately approached the Assistant Superintendent of Telegraphs, Mr Jim Allen. With the confidence of comparative youth, and zeal for amateur radio, I told him I could provide him with a radio link to Hobart." Ray remembered Mr Allen as being a man with an iron fist who was brought to the CTO for the express purpose of upgrading the then existing poor service as well as the poor discipline and morale. Mr Allen exercised his power ruthlessly and was renowned for punishments for any slight misdemeanour or failure.

The need for communications to Hobart was becoming desperate, but Ray's radio scheme received great opposition the Superintendent, as well as the more powerful ranks of the hierarchy. Eventually, Jim Allen took a gamble with Ray's

proposal, but, in so doing, he clearly indicated to Ray that his future was on his shoulders (in retrospect, one should have said that his future lay in his hands — the ones that sent the Morse).

Amalgamated Wireless of Australia (AWA), who then ran the ship to shore radio service, were also contacted to see if they could render any assistance. Ray explained, "They replied that they were unable to assist as their own traffic demands could not be abrogated to release VIM and/or VHF for PMG traffic." Thus, it seemed Ray's plan was the only viable alternative to normal telegraphic links.

Jim Allen asked Ray to nominate an amateur operator in Hobart who Ray deemed capable enough for the task at hand. Ray immediately thought of Trevor Watkins, then VK7DX. Having spoken with Trevor on many occasions, Ray was conversant with his fine Morse ability. The "powers" in the Telegraph Branch then requested VIM to send a message to VIM, directed to Mr Andrews, the Superintendent of Telegraphs, Hobart. The message was to inform him of what was to take place until normal communications could be restored (it also informed Trevor VK7DX, to meet VK3RJ on 7 MHz).

Ray was sent home immediately in order to prepare.

At the scheduled time, Trevor appeared and contact was made immediately. Ray spoke to the Superintendent, Mr Andrews, through Trevor and told him he had traffic to pass. (Ray had brought a bundle of about 30 Telegrams home with him. This was only a small portion of the many hundreds which had begun to accumulate in the Melbourne CTO). He then commenced transmitting them to VK7DX. Mr Andrews, listening in Trevor's shack, was so impressed that he immediately gave the operation his blessing.

Hence, on April 5, 1929, the operation commenced just after mid-day and continued until well after 6.30 pm when they were instructed by the administration to close down. On the second day of operation, the PMG installed a Morse line between Ray's home in Box Hill (where he resided until his death), and the CTO, Melbourne. A telegraphist was positioned at Ray's home to pass traffic from the radio link to the CTO and vice-versa. The second day of operation again commenced about mid-day. This worked smoothly and efficiently until about 9.30 pm when conditions on 40 metres were no longer favourable for propagation between VK3 and VK7. After a quick meal-break, the two operators had agreed to QSY to 80 metres. On this band they worked until well after 2 am.

By modern standards, this band change seems quite simple, however at the time it posed a problem for Ray's equipment. It consisted of a Tuned Plate Tuned Grid (TPTG) self-excited oscillator, with no external or extra amplification. The transmitting valve was a UX112A and power out was about four and a half watts (250 volts at 20 mA). The power supply was made up of a Philips B Battery Eliminator transformer, the output of



During early 1986, I had the pleasure of meeting Ray Jones VK3RJ. Ray had obliged in assisting me with my research concerning the late Leo G. Cohen. Most CW operators of old, ex-PMG telegraphists, and other Morse related areas will recognise the name as being the one which is on the name-plate of the Simplex Auto. This device was a mechanical, semi-automatic apparatus for sending Morse code manually, and was often referred to as a "bug". (After the American company called Vibroplex which made a similar device many years earlier. This company used a small red coloured bug or beetle on the name-plate as its insignia).

Some of the Simplex Autos made were unique in that they had a pendulum positioned at a right angle to the finger paddle. There was also a model which produced automatic dashes.

Cohen, a telegraphist with Ray in the 1920s and 30s, was the designer of this type of key, many of which still remain in the shacks of radio amateurs today.

During the course of my interview, Ray spoke of the early days of amateur radio in Australia. He mentioned that his call sign, VK3RJ, was obtained in July 1928 and by December he was on the air. From about 1914 to 1960, Ray was involved with Morse code in one form or another with his occupation.

In 1914, aged 14, he began his career as a PMG "messenger in training" a position which eventually led Ray to becoming a telegraphist.

He enlisted in the Australian Imperial Force (AIF), Wireless Unit, in 1918. After the war he returned to his position with the PMG.

In World War II, he spent five years in the Royal Australian Air Force (RAAF), wholly in signals.

which was rectified by a Raytheon tube. Antenna was an end fed Zepp (halfwave at 7 MHz) with open wire tuned feeders.

Being relatively new to the amateur bands, Ray's equipment was not set up for the 80 metre band and at the time of the operation he had no materials to construct the required inductances for this band. Ray had to resort to compressing the 7 MHz inductance with a piece of string. The variable capacitors in the TPTG, combined with the compressed inductor, sufficed for Ray to obtain a steady signal on what eventuated as the 82 metre band. The late Max Howden VK3BQ, lived close by and rendered invaluable assistance in getting Ray on-air on the 80 metre band.

Trevor reported that, whilst Ray's signals on this band were weak, but receivable, he was suffering from a power leakage. Still the two operators carried on until after 2 am — the third day of activity. Both operators, needless to say, were physically and mentally exhausted after the long hours of continuous sending and receiving.

According to Ray, the way in which Trevor put his messages over made him assume he was having no troubles, when in fact Trevor was working under great difficulties. Max Howden's article in the *Listener* for April 24, 1929, stated that rain had completely wet Trevor's radio apparatus. After having realised this Trevor took great care to ensure the crystal he was using was bone-dry. He then switched on the apparatus, but was unaware at this stage that water had entered the filament transformer which was used to heat the filaments of his UX281 rectifying valves. Max went on to explain that the plates of these rectifying valves are connected directly to the high potential side of the power transformer. The filaments then become the centre of the positive HT supply, and are connected directly to the plates of the transforming valves, and consequently the valves were well insulated from any earth connection. One side of the AC mains which feeds this transformer is always earthed so the effect of water in this particular transformer can be realised.

After initial turn-on, and many fizzles, pops and other strange sounds, understood and recognisable only by a radio experimenter, Trevor immediately switched the apparatus off to prevent further damage was done. At this stage he was still not on the air and the scheduled time with VK3RJ was fast approaching. Trevor set to work drying out the filament transformer. He wiped and shook it well then placed it in a hot oven for a few minutes. When he finally got on the air troubles still plagued him. The aerial feeder condensers started to smoke due to the r.m.s. insulating strips being saturated, but VK7DX could wait no longer and let them burn as he transmitted.

Max Howden further commented, "Had he used anything but crystal control I would have rendered his signals unreadable." The crystal had prohibited any wave change even though the capacitors spoiled. Trevor was of the opinion that his signal, as a consequence, was only slightly down to usual. At the end of the entire operation Trevor swore that he would encase his entire apparatus in plywood so as to avoid the same sort of mishap in future.

April 7 marked the last day of the operation. It began at approximately 8.45 am and concluded at 8.30 pm. Transmission was entirely on 40 metres. Just prior to the day's commencement of transmissions the two operators were informed that a temporary cable had been placed across the flooded area which restored normal communication circuits. Thus the stint came to an end. Ray had sent 226 telegrams and received 174 from Trevor. Also, about 25 000 press-wires were sent and received for the major newspapers in each city.

"Transmission was all on CW with both parties using 'bugs'." Ray suggests that his may have been a Simplex Auto. To quote his words, "So concluded an operation which I feel helped to put amateur radio in enhanced public and administrative esteem, and to demonstrate its efficiency in times of emergency for the first time in Australia." Ray also commented, "I got no recompense (nor did I expect any), other than that I proved my optimism was well founded. All the kudos seemed to go to Jim Allen, for shortly after he was promoted to Superintendent of Telegraphs, Brisbane. Such is life!"

COMMONWEALTH OF AUSTRALIA.



POSTMASTER-GENERAL'S DEPARTMENT.

GENERAL POST OFFICE.

MELBOURNE, C.1.
6th May, 1929.

Dear Mr. Jones,

It has come to my notice that in the recent emergency created by the disastrous floods in Tasmania, when normal telegraphic communication between Hobart and Launceston was interrupted, you voluntarily placed your radio station at this Department's disposal for the exchange of telegraph business between Tasmania and the Mainland. It is further shown that you worked considerable overtime in disposing of traffic under difficult conditions and in addition incurred expenditure in the purchase of material essential to the working of your station. Approval has of course been given to the cost in the latter connection being refunded to you but quite apart from that aspect of the matter I wish to express my warm appreciation of your unselfish action in coming forward at a time of great emergency. The facility which you afforded for the transaction of telegraph business materially assisted in allaying public anxiety as to the position in Tasmania and your conduct exemplifies the true spirit of public service. The circumstances have been made the subject of an appropriate entry upon your Departmental record and I may add have also been brought under the notice of the Secretary of this Department.

Yours faithfully,
R. E. Jones,
Telegraphist,
Telegraph Branch,
Melbourne.

It would be remiss not to mention some other amateurs in the two States which, as the records of the time show, played a part. Their involvement is uncertain, however, research seems to show their role was probably that of standby stations in case VK3RL and/or VK7DX ran into difficulties. These stations were Len Crooks VK7BQ, Crosby Welch VK7CW, Hubert Lovett VK7HL, L. Jensen VK7LJ, F. Simms VK3KS and B. Hardie VK3YX (VK3YX was then secretary of the Victorian Division of the WIA). Evidence suggests that VK3YX made contact with VK7CW and sent him outstanding news items of the day for publication in the *Hobart Mercury*. This was apparently done after permission was granted by the then Director of Postal Services, Mr H.P. Brown. A Melbourne newspaper obliged and the items were transmitted to Hobart. This initiative, although short-lived, was successful and effective.

Ray assisted the Telegraph Branch on a further four occasions, however the operator at the other end was no longer VK7DX as Trevor Watkins became a Silent Key on August 25, 1931. At a guess from those who knew him, they placed his age at somewhere between 45 and 55. His obituary in the *Hobart Mercury* August 28, 1931, suggests he was afflicted with the illness, which eventually claimed his life, even during the above-mentioned flood situation.

For the VK7 Division of the WIA, as well as many others worldwide "Watties" death hallmarked the end of an era. In brief, he served as a VK7 WIA Councillor from 1928 to 1930. He also took an active part in the guard station of the Airforce Wireless Reserve in 1929 and 1929. Bill VK7TE, (today) suggests that "Wattie" was given Life WIA Membership in 1930.

In late December 1931, Ray again assisted the PMG but details are sketchy. After examination of Ray's logs for that time, it seems that the operator in Tasmania was Crosby Welch VK7CW. The message load handled and exact dates are unrecorded. Official departmental acknowledgment confirms that the operation took place during the pre-Christmas week. Ray stated, "Mr Lawrence did not confer plaudits lightly!" There is no doubt to the validity of the operation.

Next operation was from July 1 to July 3, 1932 when the Bass Strait cable suffered a break-down. At this time it is impossible to ascertain who the Tasmanian connection was, but possible candidates are VK7CW and VK7JB. However, it does seem unlikely that it would be VK7JB, as he was only licensed on June 12, 1932, and, at the time of the operation, would have been a relative newcomer to the bands and unaccustomed to the traffic load involved. The actual operation lasted for three days, and Ray recalled some hundreds of messages being handled. Unfortunately no official departmental records exist of this exercise and Ray could find no reference to it in his log book. The evidence however lays within a few personal notes referring to dates, times, etc. written during and shortly after the event. Ray was unable to account for the lack of documentation.

Ray was again involved in another cable break-down between Tasmania and the mainland from September 29 to October 1, 1934. The Tasmanian connection was Jack ("Buck") Batchelor VK7JB. Jack was a proficient CW operator by this time and someone Ray had many contacts with on-air. Jack's home-brew equipment consisted of a transmitter using a pair of 800s (in push-pull) in the final (Permission to use increased power was

WATTIES OBITUARY

OBITUARY

THE LATE MR TREVOR WATKINS, AMATEUR WIRELESS EXPERIMENTER.

With the passing of Mr Trevor Watkins, whose death occurred on Tuesday last (25.8.1931), after a long illness, Tasmanian amateur wireless experimenter. He was the first person in this State to broadcast music by wireless, from his private transmitting station in Hobart and for several years devoted himself to the study of radio and the development of radio ideas, many of which have been adopted by fellow experimenter who were in communication with him here and from other parts of the world. A special branch of study was wireless telegraphy, and as an amateur operator his familiar call sign "7DX" was known in every part of the world where radio amateurs are established. Many of the formal acknowledgments of receipt of his transmissions (of which he possessed hundreds) testified to the excellence of his work at the Morse key. It was quite a usual thing for him to have chats most daily with fellow experimenters in several continents, his opinion on the adjustment of transmitting apparatus being much sought after. In a number of successful tests his work was highly appreciated by the signal section of the Royal Australian Air Force, his station in Hobart being the section guard station for this State. In 1925, in competition with a large number of others in Australia and New Zealand, he had the honour of winning the trans-Pacific tests for amateur radio operators. During the severe floods in 1929, when departmental telegraph lines were out of action between Hobart and Launceston, his private station was on the air most continuously for two days and two nights and for the greater part of the time Mr Watkins, through a sick and aching body, with his instruments with very short intervals for sleep, receiving and dispatching many thousands of words of press news. A most unassuming man with a very general education, ever ready to pass on his knowledge to fellow experimenters, "Wattie" as he was called by radio friends here and in different parts of the world, will be much missed.

Testaments of sympathy from the divisions of wireless institutes on the mainland received by his relatives all bear testimony to his sterling worth. Young men of his type can ill be spared.

At the graveside at Cornelian Bay yesterday, where the funeral service was conducted by the Rev J.W. Barrow, a large gathering of representatives of departmental, commercial and amateur wireless bodies paid their last respects to the deceased, the pall-bearers being well-known amateur wireless operators.

—From The Hobart Mercury August 28, 1931.

COMMONWEALTH OF AUSTRALIA.

PAGE 3

ALL COMMUNICATIONS TO BE ADDRESSED TO THE DIRECTOR.

POSTMASTER-GENERAL'S DEPARTMENT.

TREASURY GARDENS, MELBOURNE C 2 TELEPHONE CENTRAL 9581

IN REPLY PLEASE QUOTE

REF: R.29/2541.

24 APR 1929

Dear Mr. Jones,

In connection with the recent serious interruption to telegraph communication in Tasmania, I desire to express my appreciation of your public spirited conduct in placing your radio station at the disposal of this Department for the transaction of public business. The willingness with which you volunteered to assist the Department in its difficulties proved of invaluable aid in organising emergency services and thus materially assisted in relieving public anxiety regarding the disaster which had befallen Tasmania.

Will you please accept my very sincere thanks for your valuable assistance.

Yours faithfully,

H. Brown

Director-General.

R. Jones, Esq.,
Telegraphist,
Chief Telegraph Office,
MELBOURNE, C.1.

given by the authorities as the transmitter could be used during this PMG emergency! The antenna was a full 7 MHz Zapp and the receiver a five-valve superhet. The Commonwealth Archives in Hobart recorded that the power input at the time for VK7JB was 70 watts. The frequency designated by the PMG was 7.95 MHz however the reason why this was chosen is unknown.

The Archvess material also revealed the following for the day's operation of October 1, 1934. It states:

"On Monday, 1st October, following request from Super of Telegraphs, station VK7JB was again used with a departmental telegraph. (Mr. Batcher in attendance Mr. Batcher was standing by for making engineering adjustments."

This last comment is quite interesting in that it signifies that Jack did not do the operating on this day, but rather ensured that the equipment was working satisfactorily. Initial thoughts were that a departmental telegraphist who made a living from listening to a sounder, would have great difficulty listening to Morse tones over the wireless. However, after further examination of archival material and by talking to amateurs of that era, it seems many telegraphists did in fact attach a buzzer unit to their circuit rather than the standard sounder. Also, the PMG did have its own wireless service. Thus, one could assume many telegraphists would have also been proficient wireless

COMMONWEALTH OF AUSTRALIA
FOU/HUP. _____

No. 0796—7/1998

on June 2, 2009, with 100%

31/5175. POSTMASTER-GENERAL'S DEPARTMENT.
Telegraph Branch.

MEMORANDUM.

Mr. H. Jones,
Telegraphist.

MELBOURNE. Cl. 4th January, 1932.

Interruption to Tasmanian ~~CAGE~~ Working, December, 1931. Use of Radio as Auxiliary Service.

With reference to the above, the interruption to the Tasmanian Cables at the peak period of the year, and including the Christmas week, occasioned considerable apprehension and difficulty as to the disposal of the load.

Your service therefore in undertaking the transmission of surplus traffic by radio is very much appreciated, and I have expressed the thanks of the Department for your valuable assistance. The technical knowledge and telegraphic skill, as well as the use of your plant, were of material assistance in the disposal of the public traffic handled and relieved the Department of much anxiety as to the safety of the business. I shall be glad to learn if you were involved in any out of pocket expenses in connection with the operation of the station.

W/ST-5 to ALL F&S DESK TELECRAPHS

Letter of appreciation from Mr Lawrence,
A/G Superintendent Telegraphs, 1932.

Mr J Batchler dies in Hobart

Mr Jack Copeland Balchier (66), well-known throughout the State in many sporting, educational and wireless circles, died suddenly at his home in Willowdene Ave. Sandy Bay.

Son of the late John Alexander and Esther May Batchler, he was born in Hobart, and educated at the Lansdowne Crescent School and Hobart Technical College.

He first worked in the Tasmanian Railways, and before World War Two, joined the AMF, specialising in signals.

He served in the South-West Pacific and was mentioned in despatches in Tarakan, with the occupation forces in Japan for two years, and later in Korea.

On his retirement from the Army, he joined the Tasmanian Education Department as an electronics officer in the Media Centre.

In his younger days, Mr Balchier played senior football with both Canmore and Lefroy, and he was a member of the winning Mercantile senior rowing eights in 1929-30.

He was a life member of the Wireless Institute of Australia, and participated in annual remembrance day competitions when Australian amateur radio enthusiasts sought to make contact with radio "hams" throughout the world.

Mr Batchler also was an associate member of the Institute of Radio Engineers of Australia, and a member of the Old Hobaritians Masonic Lodge.

—From *The Mercury* May 26, 1979

—From *The Mercury* May 26, 1979

VK3RJ

140C 18
TO 100 0620 29 JAN 57
100 1800 5
899
FOR SUPPORT OF
HAYE JONES TO KAY

2170

COMMONWEALTH OF AUSTRALIA

TELEPHONE NO Cent. 132
SWITCH NO 465

www.dan.com.au

POSTMASTER: GENERAL & DEPARTMENT

Table 1. *Staphylococcus aureus* strains and their isolates

MELBOURNE 30th October 9 24

MINOR ANDUM Lo

Mr. Ray Jones,
Telegraph & T.
Melbourne

interruption transmission cable - termination
of radio

With reference to the recent breakdown in the Tasmanian cable, I have to express appreciation of the assistance given in maintaining communication by radio with Tasmania.

The ready and efficient manner in which you came to the assistance of the Branch materially conduced to the successful handling of the load.

Please accept the best thanks of this Branch
for the assistance rendered.

W.A.C. **WRZB** W.B.E.

[illegible]

Jack Batchler VK7JB, c. 1930.

Memorandum to Ray VK3RJ, from the Superintendent Telegraphs for Ray's service during the Cable Breakdown of 1934.

(C. J. McLaughlin)
SUPERINTENDENT Telephone



Jack VK7JB, and his station c. 1930.

operators. The archives note, 'On October 2, the Super of Telegraphs requested the use of Mr Batchler's station. However this afternoon (Tuesday) the Department Wire less Services were operating satisfactorily and Mr Batchler was able to return to his civil duties.'

Lastly, on December 24, 1934, VK3RJ and VK7JB were used as an ancillary circuit to discharge the heavy load of Christmas greetings. About 60 messages were handed, and more were expected, but the expected traffic load did not materialize.

NEW VK AMATEUR



Frank VK2EKY in his VK shack



On Niue Island

I have been a radio amateur since 1971. My first call sign was SP5EKY. I was active with this call sign in Poland until December 1981, and still retain the call.

I arrived in Australia in July 1985 and have been operational on the bands with VK2EKY since December 1985.

Prior to ceasing operation in Poland I was a member of the SP5DX Club and had worked over 250 countries and had about 15,000 contacts — many of these were with VK amateurs. I have since worked many of these stations with the VK2EKY call sign and it has been a great surprise for them.

Now, as an active Australian station, I have made about 8000 QSO with over 200 countries. I love Australia and amateur radio. I have met many great Australians on the air and I was thrilled to win my section in the last VK/ZL/Oceania Contest — this was a first for me.

From April 18 to May 15, 1987, I operated from Niue Island as ZK2EKY (a DXpedition/holiday by myself) and worked 9000 stations, almost 200 countries, and 39 Zones (except 34) — all-bands CW and SSB.

I am planning another DX trip to Manihi Island (North Cook) probably with the same call sign. A QSL for my call signs to VK2EKY, PO Box E450 Sydney, NSW 2000.

I became a member of the WIA upon arriving in Australia and read AR magazine.

I have found amateur radio a great help in learning the English language.

—Contributed by Zbigniew (Zig or Frank) Murdzia VK2EKY

BUNGONIA (NSW) RESCUE 87

WICEN operators provided communications assistance during the Rescue Exercise, an annual Sydney based Cave Rescue Group event was held at Bungonia, on March 14, 1987.

—Contributed by Greg Baker

WICEN News



Jeff VK2BYV, operating with Steve VK2DNN, observing.



Jim VK2BZD.

SUBSCRIBE!

TO AUSTRALIA'S TOP ELECTRONICS JOURNAL

The ionosphere and radiowave propagation — an update

So what's new in modems?

own project 600A

A 100 watt 'ultra-fidelity' topology MOSFET amp module

Consumer to win in the DAT versus CD battle

Understanding 'switched-mode' power supplies

Recent developments in silicon sensors

EG7515 CMOS

own data sheet

The Marantz PM-94 'digital monitoring' amplifier

Australia's only independent technical electronics journal, providing a balanced coverage of the fields of audio, broadcasting, pro sound, video, communications, computing, engineering and technology.

For only \$49.95 for 12 issues, you get:

- **5 to 10 projects to build each month**
— the best from our Australian designers and the cream from the British *Elektron*.
- **Monthly Project Buyers Guide**
— each issue we detail where you can get the components featured in our projects as well as which firms are stocking kits of our projects
- **Telephone technical enquiries**
— yes, you can speak to the editorial team direct and have your queries answered. We don't live in an ivory tower!
- **Hi-Fi, sound and video news, reviews & features**
— independent, professionally conducted reviews from Robert Fitzell. Acoustics features from well-known writers like Dennis Langane and Malcolm Go dfrinch
- **Practical computing articles**
— a whole section each month devoted to electronics enthusiasts exploring computing and computing enthusiasts exploring electronics
- **Communications coverage**
— news, reviews and practical features on RF techniques and radio communications, covering everything from circuit techniques to cellular radio, from satellites to amateur radio
- **Topical technical features**
— covering consumer electronics, topical technological and scientific fields, current issues and circuit techniques
- **What's new in the market**
— occasional features on new products and developments, giving topical and informative coverage of specific fields and product groups.

Roger Harrison's
**Australian
ELECTRONICS**
Monthly
Incorporating
Elektron Electronics

Published by Kadhom Holdings P/L, Inc. in NSW, Fox Valley Centre
Cnr Fox Valley Rd & Kings St, Wahroonga 2078 NSW

You'll find something to interest you every month in *Australian Electronics Monthly*, no matter what your special interest might be. The magazine is "sectioned" into categories for easy reading and easy reference, each section headed by its own news column.

If you've found AEM hard to get in your newsagent,
DON'T DELAY, SUBSCRIBE TODAY!

If you work in electronics, communications, computing or servicing, a subscription to *Australian Electronics Monthly* could be tax deductible.

COUPON

Yes! Put me down for a subscription to *Australian Electronics Monthly* at \$49.95 for 12 issues. I am paying by (please circle payment method)

Cheque (No) _____

Money Order (No :) _____

(Cheques or Money Orders should be made out to 'Australian Electronics Monthly')

☐ Bankcard ☐ Visa ☐ Mastercard ☐ Amex

Card No: _____ Expiry _____

Signature _____

(Note: unsigned credit card orders cannot be accepted)

Name _____

Address _____

Postcode _____

Happy Birthday INTRUDER WATCH!

This year celebrates the 20th Anniversary of Intruder Watch.

Yes! 1987 is indeed the birthday (or anniversary if you like) of the founding of the Australian Intruder Watch.

In 1967 with Max Hull VK3ZS, in the WIA Federal President's chair, the Federal Council met, and the formation of the Intruder Watch was one of the results of that meeting.

WHY AN INTRUDER WATCH?

It was said at the above meeting that "Generally speaking, anyone may use any frequency until someone objects, (the 60-day rule). This means that intruders who use the amateur frequencies illegally may claim that they have the right to the frequencies because no one has objected. " and ... " this is vital at the international level. Unless amateurs can prove that they have objected to the presence of intruders on their bands, they have no case before an international tribunal.

This premise still holds good today. So it is vital that we have documented evidence of our objections to each new intruder.

David Wardlaw VK3ADW, was appointed as first Federal Co-ordinator, and initiated the formation of the State groups.

HOW DOES THE INTRUDER WATCH OPERATE?

The amateur or SWL hears what he suspects is an intruder transmission on an amateur band and makes a note, detailing frequency, time (UTC) mode, signal strength, date, and sends the report off to his Divisional Co-ordinator.

The Divisional Co-ordinator receives the reports and edits them. He is looking for spurious signals, receiver IW products, etc, and is trying to establish that the reported signal is, in fact, an intruder.

Having done this, he sends his reports along to the Federal Co-ordinator, who does much the same thing. The reports are going through a kind of filter process. When the Federal Co-ordinator is satisfied he has more or less a list of some fide intruders, he collates them all into a monthly summary which is set out in ascending order of frequency. He also keeps records of all intruders reported, in order of frequency and alphabetically. By doing this, he can keep tabs on intruders and see which ones are intruding on a regular basis, rather than wasting time on the signal which appears once only.

The Federal Co-ordinator files a copy of the summary, sends one to the Department of Communications, and forwards one to the International Amateur Radio Union Association Region 3 Monitoring System Co-ordinator. The IARU 3 Co-ordinator collates all National Society Intruder Watch summaries into a grand summary, which goes to:

1. The IARU Region 1 and 2 Monitoring System Co-ordinators, so they can compare activities of intruders.
2. The Secretary of IARU Region 3, who sends copies to all member Amateur Radio Societies in Region 3.
3. To the IARU Monitoring System International Co-ordinator. He has access, through the IARU Council, to the International Frequency Registration Board (IFRB).

So you can see that comparisons are made, world-wide, of intruder activity, and the respec-

tive Regional Co-ordinators look at the other summaries to see if any intrusions complained of are originating in their own region. The Intruder Watch is concerned with transmissions originating from Governmental, commercial and military sources. Central and Northern Europe and Asia figure prominently in the list of originating locations.

DOES THE SYSTEM WORK?

Yes. Successes have been documented ranging from the removal of Australian Defence Forces stations using obsolete transmitters and causing harmonic radiation, the removal of French Polynesian R/T services using the 40 metre band, the removal of Chinese RTTY stations, the removal of licensed amateurs working maritime mobile and passing commercial traffic on behalf of a commercial interest, and so on. However, every victory is hard-won, and requires hours and weeks and months of persistent monitoring and reporting by all concerned. So, if you report an intruder and you hear the same signal again next week or next month, don't think that nothing is being done. It is a very slow business, and is plagued by the demands of diplomacy and political considerations.

THE IW CERTIFICATE OF MERIT

Whilst not an amateur radio award in the true sense of the word, there is a Certificate of Merit available, issued annually to that person, amateur or SWL, in each WIA Division, who best demonstrates support for the Intruder Watch. These certificates are issued on a once-only basis, and are a small tangible token of thanks from the Intruder Watch to its supporters. 1985 saw the first of these issued.

WHAT'S HAPPENING ELSEWHERE?

The RSGB has its Intruder Watch, the DARC has its Bandwacht, the ARRL has its AIRS (Amateur Interference Reporting System). New Zealand, Japan, Netherlands, Switzerland, and many other radio societies sponsor a similar system. Of course, what is heard in some of these places is not heard in others — that is why it is important to do comparison checks, and have the various co-ordinators exchange information.

MEET THE CO-ORDINATORS

FEDERAL CO-ORDINATOR — Bill Martin VK2COP. I was first licensed in 1960, as VK2PFH after a brief period of SWLing. I then upgraded to VK2EBM, and changed to my present call in December 1984. The presence of intruder stations captured my attention from the outset of my interest in radio, and I was appointed VK2 Co-ordinator in May 1981. It seemed a natural progression to accept the Federal position in July 1982, when the position became vacant.

When the position of co-ordinator for the IARU Region 3 Monitoring System became vacant in February 1986, it seemed to be the only thing to do to undertake the job. I am a band-hopper, and keen award chaser. I have been a NSW State Police Officer for 27 years, and a part-time musician for 30 years, playing the clarinet and saxophone. I have also taught music for several years. I am also interested in gardening. In spite of its inherent frustrations, I

Bill Martin VK2COP
FEDERAL INTRUDER WATCH CO-ORDINATOR
33 Sommersville Road, Hornsby Heights, NSW 2077



Federal Intruder Watch Co-ordinator, Bill Martin VK2COP.

am very happy to be involved in the Intruder Watch.

Alan Hawes VK1WX. Alan has been handling the ACT post since March 1986, as well as being heavily involved in other WIA matters. He has been licensed for seven years, and is a main interest in the hobby is HF DXing and antennas. Alan is an electronics technician by occupation, and enjoys 10 pin bowling when he is away from the radio scene. He resides in Evatt ACT.

Philip Pavey VK3BHN. Philip has recently joined us as Co-ordinator for the Victorian Division. He was first licensed in 1962 as VK3PMJ, and attained his present call sign in 1985. Philip is actively engaged in getting young people into amateur radio and is currently Vice-President of the Frankston and Mornington Peninsula ARC. He manages to fit this all in whilst undergoing an apprenticeship with Telecom at Ballarat.

Gordon Loveday VK4KAL. Gordon has been on the air since first licensed as VK4ZBI in July 1957. He is a storage battery assembler by occupation and lives in the wilds of Rubyvale, in central Queensland. Gordon enjoys home-brewing and rag-chewing on VHF/UHF. He is other interests include listening to a fine collection of classical recordings. Although somewhat isolated geographically, this does not hinder his active participation in the Intruder Watch. Gordon has been involved in the IW since 1979.

Lindsay Collins VK5GZ. Lindsay was first on air as VK5NLK in September 1976. He is retired, and is a former 7th Division AIF S gnat's Radio

Operator He is resident in Rosslyn Park, and enjoys experimenting with all kinds of electronics. His main interest is CW, and he was co-author of an article in AR on a programmable memory keyer, which he uses to great advantage. Lindsay was appointed IW Co-ordinator for VK5 in 1984.

Bruce Hunt VK6XZ. Bruce lives at Thornlie, and has been licensed for four years. His interests in the hobby include DXing on HF, satellite communications and data transmissions. Bruce nominates computing as another hobby, which is not surprising, as his occupation is that of a Computer Systems Consultant. Bruce holds the view that emphasis should be placed on encouraging and educating our regular contributors, where needed, and an effort made to recruit more helpers for the IW.

Robin Harwood VK7RH. Robin was licensed on Christmas Eve 1971, and is a resident of Launceston, who is interested mainly in SWL'ng. You will no doubt have read Robin's monthly SWL column in AR. He is also active with the Australian Traffic Net and enjoys reading, writing letters and music appreciation. He is retired and has been IW Co-ordinator since 1984. He is quick to say that the number of intruders is increasing, so must urge more people to swell the ranks of intruder watches, to keep abreast of the problem.

Henry Andersson VK8HA. Henry lives in Stuart Park, about one kilometre from the business centre of Darwin. When I asked Henry his main interest in the hobby I realised I had made my first mistake... I should have asked him "is there any aspect you are not interested in?" Morse lessons; the VK8 RTTY Broadcast; the Darwin AFC; the VK8 QSL Bureau; sword-hunting; contesting; home-brewing; you name it, Henry does it! Also, like many of us, he is continually trying to exercise mastery over a computer. Henry has been the IW Co-ordinator

in VK8 since 1975, but had been involved long before that. Possibly he was the first VK8 to be involved in intruder watching. Henry has been licensed since 1945.

So, that is the crew who look after the co-ordination of reports around Australia. Many thanks for your efforts, fellas, and we can all thank them in the future by sending in reports of any intrusions we hear on the amateur bands of frequencies.

So, once again, *Happy Birthday* Australian Intruder Watch, and we look forward to continuing support from those who have assisted in the past, we look for their support in the future, as well as the support of those who have yet to lend a hand. Remember — the intruder problem is a continuing problem.

WIA INTRUDER WATCH CO-ORDINATORS PAST AND PRESENT

FEDERAL	
1967-1971	David Wardlaw VK3ADW
1971-1980	Alf Chandler VK3LFC assisted by Ivor Stafford VK3KB
1980-1981	Graeme Fuller VK3N3X
1981	Bob McKernan VK4LG
1982-1987	Bill Martin VK2EBM/VK2COP
VK1	
1974-1978	Ted Pearce VK1AOP
-1984	Fred Robertson-Mudie VK1MM
1984	Grahame Parsons VK1GP
1985	Ray Roche VK1ZJR
1986-1987	Alan Hawes VK1WX
VK2	
1970-1974	Bill Jenvey VK2ZO
1974-1977	Les Weldon VK2AFG
1981-1987	Bill Martin VK2COP
VK3	
1968-1969	Morton Davis VK3ANG
1969-1971	Alf Chandler VK3LC

1971-1975	Albert Cash SWL
1975-1981	Ivor Stafford VK3KB
1981	R J Hose VK3AKH
1982	Frank Gardiner VK3VAV
1983-1986	Steve Phillips VK3JY
1986	Bill Wilson VK3DXE
1987	Philip Pavay VK3BHN
VK4	
1970-1979	Murray McGregor VK4XX
1979-1987	Gordon Loveday VK4KAL
VK5	
1971-1972	Bill Franz VK5FF
1972-1982	Lein Cotton VK5LG
1982-1987	Colin Ralph VK5KCR
1984-1987	Lindsay Collins VK5GZ
VK6	
1973-1975	Ross Greenaway VK6DA
1976	Albert Cash SWL
1976-1982	David Couch VK6WT
1982-1986	John Farrow VK6ZJF/NBP
1983-1987	Bruce Hunt VK6XZ
VK7	
1971-1972	Ian Pearson VK7KB
1972	Max Ives VK7XK
1981	Frank Beech VK7BC
1982-1983	Jim Davis VK7OW
1984-1987	Robin Harwood VK7RH
VK8	
1975-1987	Henry Andersson VK8HA

So, these people have started, and kept the Intruder Watch going in Australia, for 20 years and are to be congratulated, along with hundreds of amateurs and SW's who are the people who hear the intruders in the first place and without whom the Intruder Watch could not function. Let us hope that they, or people like them, can do the job for a further 20 years because it will be unforgotten as long as we always be necessary to keep watch on our frequencies.

Happy Birthday, Intruder Watch!

Wireless Video Transmitter Standard

Recently a number of electronic devices have been marketed in Australia intended to distribute within the home television programs from VCRs, etc. Most of these devices have proved to have high signal output and have the potential to cause interference to other services at VHF and UHF. The WIA has pressed DOC for action to restrict the sale of such devices and to minimise the possibility of interference by the issue of an appropriate performance standard which would then enable action to be taken under the Radiocommunications Act.

Following is a recent DOC Press Release detailing steps being taken in respect to these devices, referred to as Wireless Video Transmitters. This was accompanied by a draft standard which should reduce their adverse effects on normal television reception and on other nearby services such as amateur.

The Standard:

- Limits operation to the UHF Television Band.
- Limits radiated field strength to 76 dB μ V/m at a distance of three metres.
- Sets limits on bandwidth and spurious emissions.
- Requires the equipment to be capable of operation over a minimum frequency range of 70 MHz.

Where a wireless video transmitter does not comply with this Standard, (after proclamation) its importation and/or sale may be prohibited under the Radiocommunications Act.

We propose to advise the Minister that it is noted that operation of wireless video trans-

mitters may occur in the band, 676-686 MHz, which is also allocated to the Amateur Service under footnote AU330 to the Australian Table of Frequency Allocations. The field strength limit of 76 dB μ V/m at three metres, as proposed in the draft standard is insufficient to obviate interference to amateur services in all circumstances and it is assumed that DOC assistance will be provided where necessary to any amateur suffering harmful interference. This could include the identification of an interference source and adjustment of frequency where other direct approaches have failed to resolve a problem. Detailed procedures would, no doubt, be negotiable through the normal WIA/DOC co-ordinating meetings.

Alan Foxcroft
Federal Standards Co-Ordinator

WIRELESS VIDEO TRANSMITTER STANDARD RELEASED

A draft standard, which aims to protect television reception against possible interference from wireless video transmitters, was released for public comment yesterday (May 20, 1987), by the Department of Communications.

A spokesperson for the Department said the need to protect television reception against improper use of these devices meant a standard had to be introduced as quickly as possible.

(Video transmitters provide "wire free" connection between video recorders and television receivers. The radio signals from the transmitters allow video recorders to operate some distance from one or a number of television receivers).

"Any video transmitter connected to a power supply can cause interference to television and other types of radiocommunications receivers operating nearby," the spokesperson said.

"In the case of a video transmitter with an excessive power level, the 'wire free' link between a video recorder and a television receiver could be up to 100 metres.

"Such signals could interfere with a neighbour's television reception, particularly where video transmitters are operated in blocks of flats or other high density housing," the spokesperson said.

The standard would specify the performance and effective range for video transmitters. Details of the standard in its draft form, would be available from the Department to suppliers, users and interested members of the public.

Once the standard came into force, the Department became aware of the use of video transmitters either through complaints of interference or the transmission of anti-social material, the user could be subject to prosecution under the relevant provisions of the Radiocommunications Act 1983. In these circumstances the video transmitter could also be confiscated.

The spokesperson said video transmitters imported or made in Australia after the standard came into force would have to comply with its requirements.

Copies of the draft standard may be obtained by writing to the Assistant Secretary, Operations Branch, Department of Communications, Canberra, or by ringing (062) 48 3800.

May 21, 1987

VISIT TO CHINA

Wally Watkins VK4DO
Box 941, Altkarvale, Qld. 4814

From left: Wang Xun, Qin Du Xun (Secretary-General), Wally VK4DO, Dorothy (wife of VK4DO), Huang Yongliang and Tong.



During a two week stay in Beijing I was able to operate BY1PK, on May 5, 1987. Stations worked were 4S7EA, UL7NW, VK2CBL, VK2AE/B (Coco) and VK3SP.

Meaningful discussions took place with the Secretary-General Qin Du Xun, Wang Xun and Huang Yongliang, regarding WIA assistance with amateur radio in China.

At that date, there were 17 stations in China, with three new ones to start within three months. One of these, BY1CKJ, in the Chongwenmen district of SE Beijing was visited. It came on air on June 1. The operator, Zhang, is very keen to work Australian stations. (More about this in a later article). Our CRSA friends escorted my wife, Dorothy, and I, to several places of interest in Beijing, including Radio Beijing studios and the Summer Palace.

BY1PK is situated at the south-east corner of the Tian Tan (Temple of Heaven) complex, access being from the road on the east of this park.

The station is located on the top floor of a building complex with a magnificent antenna farm just above. They have a triband beam for 14, 21 and 28 MHz; a caged d pole for 7 MHz; Yagis for the satellites, five elements on six-metres, plus antennas for 30, 80 and 160 metres.

Amateurs visiting Beijing are most welcome to visit the station and also operate it. Arrangements should be made well in advance before leaving Australia. A telephone call to the Secretary, Huang, when in Beijing is all that is then necessary to receive a warm welcome.

Dorothy and I were feted at a special banquet as guests of Qin Du Xun and our other CRSA friends.



Wally VK4DO, operates BY1PK.



QSP

PRECISE CLOCK

REMEMBER THE THRILL of owning your first digital watch, knowing it would keep the correct time within a minute a month and not require winding? Now there is a super-high-tech clock that keeps time within one second over 150 000 years. If you are one of the first 150 to order — at over US\$20 000 each — you may be able to get delivery by the end of this century.

It may be just as well to wait. This new solar-powered clock picks up standard time signal broadcasts from West Germany's Physikal-

Technical Institute in Braunschweig. Unless you live within 1200 miles (1900 km) of the transmitter in Mammfingen, near Frankfurt, you may have to wait for similar signals to be available by satellite. The accuracy of the clock comes from the accuracy of the cesium-beam atomic clock at the Institute, and from a microprocessor that makes the clock so smart you will never have to set or reset it, even when you "spring forward" or "fall back" for Daylight Savings Time.

The face of the clock is a bank of solar cells — enough to both power the clock and to store enough charge to keep it running when the sun

isn't out. If the solar angle harks back to sundials, remember, they weren't much good at night.

The company behind this new clock — the 125-year-old Junghans Uhren GmbH — thinks it can someday build a wristwatch based on the same principles. And they think they may be able to reduce the price.

Let us hope so. For about the same money you could buy a cheap LCD watch every day until the turn of the century. It may not be as accurate, but at least you could use it on this side of the world!

Adapted from *Gernsback's Outlook* February 1987

FUTURE OF AMATEUR RADIO

Ron Henderson VK1RH

171 Kingsford Smith Drive, Melba, ACT 2615

The April 1987 issue of this magazine contained an article about the future of amateur radio. It was forwarded as an agenda item for the recent 1987 Federal Convention where input came from all Divisions. Incidentally, one member wrote to Executive through his Federal Councillor with his views on the topic.

The ACT Division aired the topic at a Divisional meeting to determine members views. NSW held a forum, sadly, less than 10 members attended. Queensland circulated the clubs and presented a well considered paper which is part of the Convention minutes. South Australia discussed the topic at a conference of clubs and the West Australian Division's presentation to the Convention was based upon a report to their council. In summary all Divisions considered and spoke on the matter. The minute secretary took down the key points from this discussion and later read back a combined statement to ensure it conveyed the feeling and intent of the Federal Council. Those points included:

Age profiles of potential members
Component supplies
Recruitment
Entry points to amateur radio service
Amateur examinations
Practical experience
Equipment complexity
Helping others
Syllabus changes
Advanced class licence
Common band
Courses
Public relations
Administration
Regulations

The key points with supporting arguments become the Guidelines to the Executive for the Future of Amateur Radio. They were adopted unanimously by the Federal Council. The Guidelines appear below. Members are invited to comment on these Guidelines desirably through the Federal Councillors as they will form the basis of the WIA's attitude to the future of our service.

87.09.17
APPENDIX G

FUTURE OF AMATEUR RADIO GUIDELINES TO EXECUTIVE

1. Presentations and discussions at the 1987 Federal Convention have given rise to the following guidelines to the Executive

Age Profiles

2. It is necessary to tap all age groups, sowing the seeds of amateur radio in the young through schools, JOTA and like means
3. The target age groups are the 40s to 60s where family commitments have eased, more disposable income is available and a new hobby or interest is being sought

4. Senior citizens and retired persons should not be neglected when seeking new members

Component Supplies

5. The difficulty in obtaining components for home construction has been identified as a potential hindrance to WIA involvement

Examinations

6. It is necessary to exploit advantages; eg the sun spot cycle increase and two metre novice privileges. Commercial pressures are not a great influence on recruiting because of the small sales volume possible.

7. We must identify what we can offer and promote it, using all available advertising means, paid and unpaid, visual, aural and print media

8. Two fields worthy of exploring are digital electronics and the CB community, especially UHF CB. Liaison and news broadcasts, bulletin board items are obvious first actions.

Entry Points

9. A range of entry points must be offered to accommodate differing technical levels, Morse skills and desired operating modes. A "mix and match" examination system, both with and without Morse based upon one, regulations, and two, levels of complexity for theory and Morse, will accommodate most needs. Clear power levels and operating privileges must be associated with each level. There is a case for a Morse-less novice VHF licence. These proposals generally mirror the Bracewell model (AR, August 1986).

10. We should provide the opportunity for data modes within the licence structure

11. An easier entry to novice as the minimum standard is recommended

12. Considerations should be given to a student or supervised operating permit or other authority as a prelude to the novice examination.

Examinations

13. A system based upon one regulations examination, plus two levels of complexity for theory and Morse will satisfy our needs.

14. The novice examination is a basic "entry to the hobby" test of skills. Marking must not be based upon admitting a fixed percentage of applicants, rather everyone who meets the basic required skills should pass.

15. It has been observed novice examination pass standards have crept up over the years since the introduction of the licence and should be restored to the earlier levels.

16. Regardless of the above this novice entry test must remain an achievement calling for a degree of study and preparation.

Practical Experience

17. Practical experience is highly desirable, yet little if any is given in most amateur radio licence courses. The student permit mooted above could be a means of enhancing this neglected aspect

18. True amateur experimentation is still alive, although it principally applies to areas outside the transceiver proper, ie antennas, accessories, peripherals, modems, computers and the like

Equipment Complexity

19. Amateur equipment is becoming more complex and capable, fortunately increased reliability has accompanied those changes and nowadays amateur is rarely required to open his "black box". This rise in complexity is in keeping with changes in our technology influenced electronic age

20. Amateur radio as a consequence has lost its impact magic and excitement hence new avenues and applications must be found to retain interest

21. Computers are the current fad but are rapidly being integrated into amateur radio as peripherals rather than remaining in a stand-alone state

22. Digital signal processing using VLSI following upon the heels of digital data handling by computer, it offers new prospects for amateur radio

Helping Others

23. The "Elmer" approach of the USA is not well understood in Australia, perhaps because their novice examination is amateur administered. Teaching in mass has become the educational norm and this is a further contributing factor

24. The Australian amateur, whilst able to communicate over the air, is seen as remote or impersonal in face-to-face situations. Encouragement of the Elmer or elder-pupil approach, call it what you will, must enhance the personal image of the amateur

Syllabus Changes

25. Some attention to examination syllabuses is needed. The early novice level must be restored and question banks purified and expanded to permit public release

Advanced Licence Class

26. The method of determining how to qualify for an advanced class licence raises problems. Demonstrated experience may be a means however the issue raises more problems than it solves and has been rejected as a retrograde step.

Common Band

27. There is much supporting argument for a common band and the case made is for 144-148 MHz FM voice. 50-54 MHz is rejected because of band usage constraints. The 420 MHz band, whilst favoured by some does not facilitate a high common band occupancy.

Courses

28. The rising novice examination standards have led to courses of excessive duration. Also, these courses are generally without practical experience content. A course length tailored to the school term, semester, or even the winter season followed immediately by the examination, has much to commend it

Public Relations

29. Amateur radio presently has a low profile with some antagonism evidenced, especially at local government level. Planning permission is a key problem area to be worked upon

30. It is essential to remove the technical awe from our public image. Amateurs must project an improved image in face-to-face situations.

Administration

31. Whilst administrative matters will generally be dealt with separately in the review of the corporate structure of the WIA, two major issues are highlighted here. Firstly, we need better representation to and from the total amateur body. Secondly, we must employ all the skills we possess in that amateur body and break down the face-to-face barriers.

Regulations

32. The requirement is for enough standards to achieve ordered conduct.

HELICALS 2 METRES LONG	
80m	\$39
40m	\$39
20m	\$39
15m	\$39
10m	\$39

NEW TWO PART HELICAL	
Approx two metres long when assembled.	
80m	10m \$49 each

MULTIBAND ANTENNAS	
Free standing vert 80, 40, 20, 15, 10m	\$169
TRIBAND BEAMS	
Heavy duty 3 el. 20, 15, 10m from	\$379. 5 el. \$475

CHIRNSIDE ANTENNAS 26 Edwards Rd, Chirnside Park 3116. (03) 726 7353

Know your Second-hand Equipment

Ron Fisher VK3DM

3 Fairview Avenue, Glen Waverley, VIC. 3150

KENWOOD VHF EQUIPMENT continued

Continuing on from last month, we will look at a few more of the early Kenwood pieces of VHF equipment. It is interesting to note that the *Tno* has now disappeared, except in the UK where the Kenwood name has never been used. However, I have heard that the UK will soon change from Tno to Kenwood and so come into line with the rest of the world.



KENWOOD TR-2400 TWO-METRE FM HAND-HELD TRANSCEIVER

This was the first two-metre hand-held produced by Kenwood and for the time was a very advanced transceiver. Released in 1979 at a price of \$345, it featured a LCD frequency readout keyboard frequency entry and 10 programmable memories. A memory scan facility could be programmed to stop on either a busy or open channel. Memory back-up was provided from the included nicad battery pack. There was one small problem with the 2400, as the drain of the memory circuit, although small, would flatten the battery after a few weeks of non-use. It was therefore necessary to ensure that the battery was placed on the charger every three weeks or so, even if it had not been used.

Somewhat larger than the hand-helds we are used to seeing today, but in most respects they were able to keep up in performance and features. Dimensions are 71 x 192 x 47 mm (WHD), weight was 740 grams. Transmitter power output rated at 1.5 watts with no low power option. They were normally supplied with a nicad battery pack and flexi-antenna. An AC operated base battery charger was available as an option, but a normal wall plug charger was supplied. Secondhand value today would be about \$200.



KENWOOD TS-600/TS-700 TRANSCEIVERS

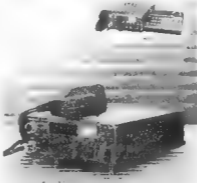
These were six and two metre, full-featured SSB, FM, CW and AM rigs, complete with in-built AC power supply. The two-metre band was tuned in four 1 MHz segments. In addition to the normal VFO tuning systems there was provision for 11 crystal controlled frequencies. With the four 'bands' this gave 44 fixed channels, but they were in the same relative place on each band.

Few amateurs took advantage of this facility with most relying on the VFO. On-air performance was quite good with excellent quality on both FM and SSB. AM receive quality was poor however, due to the lack of a suitable bandwidth; the SSB filter was used for AM reception.

Transmitter power output power was about 10 watts. The TS-700 two-metre version, was reviewed in the March 1977 issue of AR. Price at this time was \$575. Secondhand value today would be about \$350.

The TS-600 was the six-metre version and was identical in all respects except the frequency coverage. This was from 50 to 54 MHz, again in four bands. Price both new and secondhand would be the same as the TS-700.

The TS-700 was superseded with the TS-700SP. This was upgraded to include a digital frequency readout, a receiver preamplifier and also provision for an optional external VFO. Apparently not many of these were sold in Australia, however, if you happen to come across one I would assume the secondhand value to be about \$425.



KENWOOD TR-7600/TR-7625 TWO- METRE FM TRANSCEIVERS

These models were updated versions of the TR-7400 previously reviewed in this column.

The 7600 is the 10 watt output version whilst the 7625 is the 25 watt output model. Frequency selection was similar to the earlier 7400 but with the 100 and 10 kHz selector knobs now ganged and the 5 kHz point selected by a push button.

A four segment digital display indicated the operating frequency. A new feature was a memory — yes, one only — but at least an indication that we were on the way to bigger and better things. However, as an option, the micro-processor controlled RM-76 could be plugged in to do all sorts of

wonderful things. This unit contained its own digital readout and had six memory channels plus scanning of the whole two-metre band or the six memory channels. Both the TR-7600/7625 and the RM-76 are rather rare items. When released in 1978, the 25 watt version sold for \$450, but I cannot find a price on the remote control unit.

Secondhand value today would be about \$300. If you find one with an RM-76 attached you might pay another \$25. Most of these early Kenwood two-metre rigs had excellent performance and reliability characteristics and are therefore recommended at the right price.

RADIOES CHEWING THE RAG

Hello — CQ, CQ, CQ.

Station here is VK2.

The band sounds very good to me.

I hope that someone will agree —

And quickly send an answer through.

Hello — hello there VK2,

Here's a pal I've very true.

Its good to hear you on again.

Your signal's strong, your speech is plain,

So now — how copy VK2?

Oh — splendid, Pal, as I'm alive

I hear you perfectly Q five.

And as our contacts have been few,

Let's settle down the rag to chew.

For FCC we now can strive.

Hey — VK2. Hey VK2!

I want a quick report from you

I'm working for DXCC.

Your QSL is good for me.

So now, how copy VK2?

I'm sorry pal, we had a breaker

True, I swear it by my mixer

Not a word of yours came through,

Though ears were QSD by VK2

We also had some Q5-Baker.

So let us now go QSY,

Another frequency to try.

If our position this we vary

We may escape the QR-Mary.

I'll meet you by and by

Vee Kay Two — Oh — Vee Kay Two,

I say good evenings to you

I half not heard you on before

Ziss make my contras list von more

Giff QSL from you.

Hello, Hello, Pal, where are you?

Here again is VK2

I hope conditions have not changed

I've lost you, though the band I've ranged,

And I long the rag to chew

VK2, now here's your Pal,

And I can tell you — name is Hal.

CQ, CQ, CQ —

CQ, CQ, CQ —

— And everything is normal

Oh Hal, Oh Hal, my sprits sag,

My thoughts to bed I'll have to drag


It's QRT I now must go


To beat the QR-Mexico —

And I did want to chew the rag.

— "Hambers" (Originally printed in the Nigerian ARS
Newsletter 1970s)

Coaxial Cable Specials

Designation	Trade & U.L. Type Number	AWG (Stranding) Dia. in./mm Nom. D.C.R.	Insulation & Nominal Core O.D.		No. of Strands & Material Nom. D.C.R.	Nom. Imp. Ω	Nom. Vel. of Prop.	Nominal Capacitance		Nominal Attenuation	
			Inch	mm				pF./ft.	pF./m	MHz	dB/100 ft.
	RG-213 80C	9 x (Solid), 108 bare copper 901M 2.9513mm	Semi-solid Poly ethylene 285 7.24	Duo-bond® 88% tinned copper braid 1.8 (11M) 6.011mm 100% shield coverage	50	84%	24	78.7	50	0.9	3.0
									100	1.4	4.6
									200	1.8	5.9
									400	2.6	8.5
									700	3.6	11.8
									900	4.2	13.8
									1000	4.5	14.8
									4000	11.0	36.1

Designation	Trade & U.L. Type Number	AWG (Stranding) Dia. in./mm Nom. D.C.R.	Insulation & Nominal Core O.D. Inch/mm		No. of Strands & Material Nom. D.C.R.	Nom. Imp. Ω	Nom. Vel. of Prop.	Nominal Capacitance		Nominal Attenuation	
			Dielectric	Shield				pF/ft.	pF/m	MHz	dB/100 ft.
	RG-213 1354 80C	13 (7x2) 089 bare copper 1.8701M 6.1513mm	Poly-ethylene 285 7.24	Bare copper 1.211M 3.911mm 97% shield coverage	50	66%	30.8	101.0	50	1.6	5.2
									100	2.2	7.2
									200	3.2	10.5
									400	4.7	15.4
									700	6.9	22.6
RG-213 U MIL-C-17D									900	8.0	26.3
									1000	8.9	29.2
									4000	21.5	70.5

RG-213 U
MIL-C-17D

BELEN 9913 low-loss VHF/UHF coaxial cable is designed to fill the gap between RG-8 to RG-213 coaxial cables and half-inch semi-rigid coaxial cable. Although it has the same O.D. as RG-8/U coaxial, it has substantially lower loss, therefore providing a low-cost alternative to hard-line coaxial cable. Your special price from ACME Electronics is only \$4.84 per metre.

BELEN Broadcast Cable RG-213/U, MIL-C-17D is only \$5.23 per metre, or BELEN 22385 VR Commc at version RG-213, the same specification as 8267 for only \$2.14 per metre. *Prices do not include Sales Tax.

For more information about the above, or any other BELEN cable, simply contact our resident amateur radio operator, Colin Middleton (VK3LO) or our sales department.



ACME Electronics

205 M de-borough Rd Ph (03) 890 0900
Box Hill Vic 3128 Fax (03) 899 0819

SYDNEY (02) 846 2255 DARWIN (08) 91 5411
ADELAIDE (08) 211 8469 PERTH (08) 278 7122
Brisbane (07) 554 1911 HOBART (002) 34 2811
LAUNCESTON (003) 31 5545

ACME 709

Electronics Today

ONLY
\$2.95
NZ\$3.95

Electronics Today is Australia's dynamic electronics monthly. It has more special features, new and exciting projects to build and a wealth of information on components, equipment and new technology. Regular features include Australia's top hi-fi reviews and news on communications and computing. Buy your copy now from your local newsagent, or become a subscriber and have the magazine home delivered. Only \$35.40 for 12 issues.

Send your cheque to:
**Subscriptions Department
Federal Publishing
P.O. Box 227
Waterloo, N.S.W. 2017**

Federal Publishing Company,
140 Jaymont Avenue,
Waterloo, NSW 2017
Ph: (02) 863 9999



VHF UHF

—an expanding world

Eric Jamieson VKSLP
1 Quinns Road, Forreston, SA. 5233

All times are Universal Co-ordinated Time and indicated as UTC

AMATEUR BANDS BEACONS

FREQUENCY	CALL SIGN	LOCATION
50 010	J4ZJY	Mie (Near Hagoval)
50 075	V6S6X	Hong Kong
50 090	KH0E0	Honolulu
52 013	P250PL	Lokaita Island
52 020	FEAS	Noumea
52 100	2K2JX	Niue
52 200	VK6VF	Darwin
52 250	2LZVHM	Manawatu
52 310	2L3MHF	Horby
52 320	VK6RTT	Wickham
52 325	VK6RNV	Newcastle
52 345	VK4AB	Lopreath
52 350	VK6RTU	Kaipoorie
52 370	VK7HT	Morisset
52 415	VK6AM	Sydney
52 420	VK2R5Y	Gunnedah
52 425	VK2R6S	Gunnedah
52 435	VK3RMV	Hamilton
52 440	VK4RTL	Townsville
52 450	V6SVF	Mount Lofy
52 460	VK6BPH	Perth
52 465	VK6RTW	Albany
52 470	VK7RAT	Launceston
52 485	VK6RAS	Alice Springs
144 010	VK6RBS	Busselton
144 020	VK4RTT	Mount Mowbray
144 010	VK1RCC	Canberra
144 020	VK2R5Y	Sydney
144 030	VK3RTO	Gen Waverley
144 065	VK6RTV	Albany
144 070	VK7RAC	Darwin
144 080	VK6VE	Darwin
144 085	VK6RAS	Alice Springs
144 550	VK6RSE	Mount Gambier
144 565	VK6RPF	Port Hedland
144 600	VK6RTT	Wickham
144 800	V6SVF	Mount Lofy
144 950	VK2R6W	Sydney
145 000	VK6RCH	Perth
432 057	VK6RBS	Busselton
432 180	VK6RPH	Nedlands
432 010	VK6RTT	Wickham
432 020	VK2R5Y	Sydney
432 440	VK6RBB	Brisbane
432 445	VK6RNL	Cairns
432 445	VK4RTL	Townsville*
432 450	VK6RNV	Newcastle
432 535	VK3RMB	Mount Burreyong
432 540	VK4RAR	Rockhampton
1296 171	VK6RBS	Busselton
1296 420	VK2R5Y	Sydney
1296 480	VK6RPH	Nedlands
1296 000	VK6RNV	Newcastle

1 A note from JA1VOK, advs K8E0I has now shifted to 50 090 from 50 080 MHz, since our autumn months: a.s.o. that J01YAA, being listed on 50 110, has ceased operation

2 Mark VK6AQ, advises the present frequency of VK0MA = 52 418. He has problems stabilising the frequency, which is only a very slight drift, due to the excessively cold conditions in the unheated building in which it operates. With an outside temperature of around minus 25 degrees Celsius at the moment, one can understand there could be problems!

3 and 4. Note that these two beacons are on the same frequency! Please take note of the next paragraph

BEACONS AND FREQUENCIES

For years I have been trying to establish the accuracy of the beacon list and have repeatedly implored beacon custodians to advise me of the status of their beacons, frequencies and any changes attached to the various beacons under their control. These requests, in most cases, have been ignored, so inevitably we find beacons listed which are no longer operating. My beacon list is published in many other publications, and mostly without acknowledgment, I might add, and, as a result, the errors are then compounded, particu-

larly where the list is further lifted out into additional magazines, etc.

Eventually, the inevitable had to happen. We now have two 70 cm beacons in close proximity on the same frequency! VK4RIK, in Cairns, and VK4RTL, in Townsville, both on 432 445 MHz. A letter from Roger VK4CD, of the Townsville Amateur Radio Club arrived this month which says, in part, "VK4RTL has been operating in Townsville for some years on 432 445 MHz and approval has also been given by DOC and the WIA for a two metre beacon on 144 445 MHz. In fact, our VK4RTL licence shows this endorsement." I certainly never knew the beacon was operating, otherwise it would have been listed, and I can only presume the Cairns people also did not know when requesting permission to erect a beacon.

The letter also goes on "I am surprised that the WIA Beacon Co-ordinator has not provided you with these details following a survey done of beacons last year. In the interests of harmony among VHF and UHF amateurs, I hope that the co-ordinator can sort out the mess that has been created by the allocation of similar frequencies." Certainly someone has erred in this case, either the Beacon Co-ordinator or DOC or both. I have replied to Roger VK4CD, suggesting dialogue be commenced between the Townsville and Cairns Groups, with the intimation of amicably resolving the matter.

Nevertheless, Roger enclosed a copy of a report on Australian beacons issued in March 1986, by Tim Mills VK2ZTM, the FTAC Beacon Co-ordinator (a copy of which I also received from Tim at the time), but as this contained so many errors, I did not use it as a basis for any adjustment to my listings; eg VK3RMB, at Ballarat, is shown as operating on 432 425, 432 451 and 432 535 MHz! That is only one set of errors. It is apparent the list is showing beacons for which permission has been granted to erect, but which, in fact, are not operating, but the list does not say this. I can only assume the FTAC Co-ordinator has not been supplied with the appropriate information in the same way as I have been treated over the years.

TO ALL BEACON CO-ORDINATORS

Now that a major problem has surfaced, let this be a lesson to everyone as to how bungling can be experienced largely due to inadequate communication from the various groups around the country. I have played my part for many years in giving your beacons accurate monthly publicity with updates as I find them, and I know of no other publication which has continuous listings of beacons. May I once again implore the various Beacon Co-ordinators around the country to sit down for 10 minutes (and that is all it would take) and set out details of your beacons which are operating, the call signs, frequencies, power output, antenna and locality! For reference only, you could include information on proposed beacons not yet operating. Send a copy of this report to the FTAC Beacon Co-ordinator at PO Box 300, Caulfield South, VIC 3182, and a copy to me for my listings. That is all we are asking you to do, but do it! And, please be prepared to advise any changes in status which may subsequently occur. This request is directed to all co-ordinators: those whose beacons are listed correctly are please asked to confirm that this is so, thus we will then, at last, have some accurate listings.

I would like to have this information on my desk no later than October 1987. After that date I will try and establish who has not responded, and any master copy of the list as the present listing is fairly accurate, I want to be sure of this in the light of the problem which has presently arisen. Why not put pen to paper immediately you have finished reading these columns, that way you will not forget! Past experience has shown most of you do forget!

After that tirade, it seems appropriate to move on to other matters.

Incidentally, a letter from Steve VK4KHQ, and cates he has built a six metre keyer for use as a beacon from Mount St, and after us through it for 23 days in May, he got his first contact through its use by working Mick VK5ZDR, on 4/5 at 0455. Signals were 5x9 w in QSB. It consists of a 10 WPM CW device, generated by a RS800 colour colour generator driving an external relay on the FT707 keying circuit. This feeds an FTV707R transmitter which gives about 10 watts into a halfwave dipole at about eight metres above ground (370 metres above sea level). The keyer runs at 78 percent duty cycle with an 85 second CW message and 25 second receive break.

Steve asked whether the keyer should operate on 52 050, but I advised against this but made some other suggestions. I will await further information from him before listing the keyer in the beacon list.

SIX METRES

Planned to receive a number of upgrades for the Six Metre Standings Table and the current ratings with corrections as shown elsewhere.

Barry VK2KAY, at Gunnedah, said he worked most of the stations on his list using 10 watts, but recently increased power to 80 watts. Presently he up to a live element Yag, is a TS660 to an FT880R and HL85V amplifier. Previously I had been a home-brew transmitter.

Barry has been unable to obtain QSLs from ZM80Y and A35GW. For the former the address gave in AR some time ago resulted in confirmation of my account. But I know there have been many problems with A35GW. Some have got the QSLs, many others are still trying. If anyone is able to help under present conditions please let me know.

Hatsuo Yoshida JA1VOK, advises he has worked a new DX country (number 87) on June 5, being BV0AE, on 50 010 MHz (BV transversion) and 50 010 MHz (JA1VOK answer). This was a special BV DXpedition to "Apsu", on Taiwan by JA1UT. The team worked 110 JAs on 5/8.

David VK2BA, in upgrading his six metre standings advises a pleasant time spent with Gary W6XJ and his wife Janet, when they visited Sydney briefly on March 20. They showed the couple the sights of Sydney during the day, and in the evening joined us with his VK2DR, at a barbecue at the VK2BA's household - how nice that was plenty of VHF talk and QSL card inspections!

NEWS FROM SOUTH AFRICA

An interesting letter has come from Hal Lund ZS6WB, and the following extracts are taken from it for your reading.

"I ran across your report on VK Sporadic-E propagation in the VHF column in June 1986. As this is a mode of propagation in which I am particularly interested I thought perhaps we should compare notes as our E seasons and conditions should be quite similar."

"We have a tremendous problem in getting meaningful data in this country due to the limited VHF amateur population and the small size of the country. The bulk of the VHF operators are in the major cities, Johannesburg, Pretoria, Cape Town, Durban, Port Elizabeth and East London. The short distances between many of these centres make openings very rare indeed."

"During the past E season, we had only one very good opening into Port Elizabeth and later Cape Town. The opening lasted over two hours and only five ZSs, one ZS2 and two ZS1s took part. Other than that, I have heard reports of only two other brief openings this season, one ZS1-ZS6 and the other ZS1-ZS5. am sure there have been other openings to uninhabited areas, but obviously there have been no reports."

"Along the western coast there is virtually no

VHF activity except for two metre repeater operations in isolated places, like Windhoek. Six metres out there is completely deserted at the moment.

"I plan to install a six metre beacon system, near Prator, in the next six months which will have four antennas, one horizontal omnidirectional (halo) and three Yagis beaming to Europe, Australia and the US. Tentative plans are for CW keying and the omni-antenna to transmit the first two minutes of each five minute period followed by one minute periods on each of the three beams in turn. Power should be in the region of 750 watts input. I am trying to get some antennas donated from one of the US manufacturers for the project and am hoping for three to six elements on each Yagi.

'At the same time and with the co-operation of one of the local radio clubs, we plan to install 12-15 low power beacons for Es research. These will be placed mainly in the areas where there is currently no six metre activity and will use omni-directional antennas.

"I would appreciate any information I could get from your end regarding your chain of beacons, especially regarding power output and whether directional antennas are being used. This would be very helpful to us here in determining which beacon frequencies would produce the best signals in this direction when E2 opens up."

I would also be interested in contacting one or more keen six metre operators in the area of Perth who would not for my beacon throughout this coming ES season. The distance involved is very similar to US/Europe and there have been several contacts made via ES over the past couple of years on that path. As the beacon will be situated well away from my home station, I will be able to monitor a fixed frequency for any calls from VK. The only drawback is that I will have to make a normal y take me six miles from home to work, but I have made it back home in three and a half minutes when alerted of a six metre opening.

"VHF activity has dropped to virtually nothing in the past several years, the decline mainly caused by repeaters. I would guess this problem is almost universal. Although a lot of good multi-mode VHF equipment is floating around, very few go to the trouble to put up really good antenna systems and many of the ones that get properly installed are vertically polarised for use on distant repeaters. A number of the operators here are equipped for satellite operation, but very seldom use the equipment for other contacts. I have been trying to stir up some activity and over the past several months, have been publishing a VHF newsletter that now goes to about 130 ZS amateurs."

I had never given thought to the distances in South Africa, but on looking at my atlas I see it is about 1300 km from Cape Town to Johannesburg and another 50 km further to Pretoria, these being the longest distances between populated VHF areas and approximately the distance between Adelaide and Port Macquarie or Melbourne to Toowoomba/ Ipswich area. This distance should be available quite often providing there are operators to make contact. The other distances are about 800 to 700 km and are quite close to general E.s working and would be like Adelaide to Melbourne.

The distance from Perth to Pretoria, according to my very poor map, is somewhere around 10 000 km, which would not be impossible by any means under F2 conditions. In fact, during the peak of Cycle 21, Z85 signals were actually heard here in South Australia on 50 MHz. Any Perth stations sufficiently interested to take up the challenge might like to contact Z56WB direct. The address is — Hs. Lund, PO Box 27746, Sunnydale, Pretoria 0132, Republic of South Africa. I will be writing to Hal in any case.

FROM THE UNITED STATES

Bill Tynan of *The World Above 50 MHz*, QST for the month of June, discussed the matter of band plans, particularly as it affects the six metre band in their country and Canada. Their current six metre band plan includes a few frequencies which are of interest to us and I extract from his list 50 000-50 100 CW and Beacons 50 060-50 080 Automatic Controlled Beacons 50 100-50 600 SSB and AM 50 110 SSB DX Calling Frequency.

50 200 SSB National Calling Frequency: 50 400
AM Calling Frequency, 51 000-51 100 Pacific DX
Window, 52 000-52 050 Pacific DX Window. Bill
points out that band plans, even when sanctioned
by the ARRL Board of Directors, are not binding
and they should not be taken as the ARRL
dictating to amateurs: They are intended to act as
guidelines to help amateurs gain the most from
operation on the VHF and UHF bands.

As these items are being prepared for AR, the Northern Hemisphere is entering the summer season. It will be very interesting to see if they fare as well as in Australia did, particularly the new Bill Tyler and Bill Yellin maps of the two metre coverage in QST to show the US amateurs the extent of our contacts. If they do not (and last year they did not) it will be interesting to look for any reasons. It was common knowledge during the last winter that the two metre coverage in the hemisphere fared better on six metres than we did, but it seems the situation may be reversed during the minimal part of the cycles. I am sure both Bill and I will be monitoring their results very closely. Lead time for publication will probably mean we may not see the results of these happenings before the September issue of QST.

THE WORLD OF JAMES MITCHELL

From June QST comes news that the first successful two-way contact by a team consisting of W7CNK, WA5TNY and KA5JPD occurred on 3456 MHz on April 5, 1987 when W7CNK/5, in Oklahoma City, contacted WA5TNY and KD5RO, in Dallas. Congratulations! The distance is not stated being EME, but is around 300 km terrestrial.

Also mentioned is that DL9KR is the first non-North American station to qualify for a 70 cm WAS when W5RCI, in Mississippi, provided the final State back in January. This advice from March 432 and Above EME News

THE ROSS HULL CONTEST

The publication of my reply to the comments on the contest made by Gordon VK2ZAB, in June issue brought a swift reply from Gordon. I weighed the pros and cons of publishing further comments from Gordon in lieu of writing direct and decided to do both! I feel now, as always, that any comment Gordon makes has to be respected and, although we may beg to differ at times, I am sure we still remain very good friends!

The following will refer to salient points made in Gordon's original letter and a comment on my reply in June AR. It is all very interesting reading.

"A mid-May or early August 24-hour contest would favour those who live on elevated sites? Sure it would and so what? Isn't the choice of an elevated site the same as the choice of higher power and/or a bigger antenna?"

"Really, you and other planners have got to make up your minds about what you want. Is the Ross Hull to be a prestige event?, a scratch event?, a handicap event?, an event for the handicapped?, a lottery?, a marathon? or what?"

"This is exactly what the problem is now. The Ross Hull tries to be everything to everybody and that is not possible as we have clearly seen by the lack of participation in it.

"2. The winter 24-hour event would favour those who live in cities? Not quite. It would also favour those who live within VHF/UHF range of the cities and that means about 90 percent of the population. I can't see how you could hope to do better than that. Again, this is the problem now. In attempting to suit everybody, you finish up satisfying no one. VK8ZLX happens to be one of the 10 percent. Tough luck! He would have the same problem if he wanted to be a sailor wouldn't he?"

"3. I don't think Adelaide to Albany contacts have ever occurred in mid-May or early August, but if they have or if there are any other specific paths that are liable to see anomalous propagation at those times, the answer is simple. Ban those paths from the contest."

¹⁴ Your comment that people would not have the incentive to go portable for a 24 hour contest does not hold up at all. People go portable for the John Movie, don't they?

"Also, the incentive is born of the prestige and/or the prize. I do not think a \$1000 trophy each year would be too hard to arrange, do you?"

"Therefore, people will go portable if you make it worthwhile one way or the other and I do not envisage any time limit on setting up either. They can set up a week or a month before the event if they like."

"Finally, I think that a 48 hour contest at the height of the anomalous propagation season is doomed to failure. It merely makes the basic aspects of the current Ross Hull arrangement even worse, eg the chances of a two metre 70 cm class even 23 cm opening to ZL from VK2 is quite high at that time. Imagine the screams from VK6 if that occurred during the contest! No way, Eric. You must eliminate the bias of anomalous propagation one way or the other, otherwise the event is a no contest, a farcical lottery! 73 Gordon VK2ZAB"

Well, there you have it. At least I have not backed off despite some very direct comments at me. I have to say that I do see a very small slink of light appearing in my armour which means I might have some wisdom in the above approach than I first acknowledged. It something was to be done for the winter period, then perhaps it could be worth a try in 1988 which is the Bi-Centenary year. If the new Federal Contest Manager in Tasmania, agrees, it may be possible to then drop the Ross Hall from December 1987 and try it in June/July 1988 (not the holiday weekend in June though), in this way we can gauge what support is forthcoming for a non-anomalous propagation period, additionally, we should have an indication of whether general activity drops as summer is summer. In comparison to the contest running - however, this may be difficult to judge in just one year.

Okay. The subject has been hammered pretty well for the past two years. Can we have some positive/constructive comment from the multitudes perhaps covering the following points in order to get specific answers to specific questions?

- 1 Do you favour a Ross Hull Contest in June or July? If so, when?
- 2 If not, when do you favour the contest being held?
- 3 If you in favour of a 24 hour contest, say a UTC day?
- 4 If not, how long do you want the contest?
- 5 What bands should be used?
- 6 How do you decide the winners? Points score similar to present? Maidenhead grid squares? Or what?
- 7 Should there be some bonus for portable operation? If so, what?
- 8 Would you support a June/July Ross Hull Contest?
- 9 Would you enter a log?
- 10 If you still want a contest in December will you support it?
- 11 Would you enter a log?
- 12 Have you any other constructive comments to make?

It would be pleasing to have several hundred replies to these questions arrive on my desk by the end of August. That will mean you will have to settle down and think about the contest and pen your reply right away. If you are given more time you will only forget as so many have done in the past! Go on, please write now.

WESTERN AUSTRALIA

Wally Howse VK6KZ, has also written in response to my stirring on the Ross Hull I had to weigh whether to include his letter this month in view of the already large coverage or use it next month, but I decided it was necessary this month when I have already asked for feedback by the end of August.

Wally has also included some views on the 2304 MHz band and higher which I will deal with next month. This band has been the subject of considerable correspondence between VK6KZ, the WIA, DOC and others and merits further comment below.

From Wally VK6KZ: "Dear Eric. Well your column in AR for June has stirred me to write to you regarding the Ross Hull Contest! :)

"I agree totally with Gordon VK2ZAB, that the present rules mean that 'being there' is all important if winning is the objective. I would add



Contests



Ian Hunt VK5QX
FEDERAL CONTEST MANAGER
Box 1234, GPO, Adelaide, SA, 5001

CONTEST CALENDAR

AUGUST

- 1 YLRL YL-CW SSB Sprint (Rules this issue)
- 8 - 9 European CW Contest
- 15 - 16 Remembrance Day Contest (Rules July)
- 15 - 16 SEANET SSB Contest (Unconfirmed)
- 22 - 23 All Asian CW Contest (Rules July AR)
- 1 - 31 40th Anniversary Pakistan Award (See notes July AR)

SEPTEMBER

- 19 - 20 Scand new CW Contest
- 26 - 27 Scand new CW Contest
- 27 - 28 CO WW RTTY Contest

OCTOBER

- 3 - 4 VKZU/Oceania SSB Contest (Rules this issue)
- 10 - 11 VKZU/Oceania CW Contest (Rules this issue)
- 24 - 25 CO WW DX Phone Contest

NOVEMBER

- 14 Australasian Ladies' Amateur Radio Association Contest
- 14 - 15 European RTTY Contest
- 28 - 29 CW WW DX CW Contest

Contests listed in bold type are WIA sponsored contests

I wish to advise a correction in the mailing deadlines for logs in the All Asian Contest. Logs must be postmarked no later than July 30, for the phone section and September 30, for the CW section. (Not the arrival dates published in last month's issue)

NZART MEMORIAL CONTEST

Well, the lines were crossed as far as the timing of the NZART Memorial Contest was concerned. Instead of being held at the same time as our Remembrance Day Contest it was conducted on July 11 and 13. Obviously a misunderstanding which I am not able to explain at this stage. I would hope that our new incoming FCM might be able to sort this out as I believe that it could be in the best interests of all concerned for both contests to coincide.

You will note that it appears the SEANET SSB Contest is again set to clash with our annual Remembrance Day Contest. This is most unfortunate, however it is completely out of my control. I do not receive any correspondence from the SEANET officers advising me as to their contest. I would wish to point out that, from long before the advent of the South East Asia Net (SEANET), the WIA was holding the annual Remembrance Day Contest on the weekend closest to the August 15, the date on which hostilities ceased in the south-west Pacific area. I would hope that, in some way, this clash of contests in the same geographical area may be resolved. Perhaps some of you have regular contact with SEANET and might be able to suggest that the matter be looked at by that organisation.

FEDERAL CONTEST MANAGER'S REVIEW

Nearly three and a half years ago I was approached on the subject of taking on the assignment of Federal Contest Manager. I agreed to carry out this task and as far as possible, occupy the position for the recognised term of three years. I have managed to do what I agreed to and I can also state that the time period involved seems to have passed very quickly. (Maybe that is because I'm growing older.) I would like to briefly review this period of tenure now and make some comment which I hope will be of interest and also be constructive and helpful.

The position was undertaken without very much information being available to either myself or Contest Manager. I had been interested in contesting

for quite a few years and thus had followed the writings of such forerunners as Peter VK4PJ, Wally VK2DWE and Reg VK1BR, etc. No comprehensive set of guidelines or terms of reference existed for the position, thus there was not too much to go on. One was left very much to one's own devices. Such material as was passed along by my predecessor mainly comprised copies of routine correspondence or records of doubtful historical value.

I had several ideas in mind to try to clear up the contest scene and had some of my suggestions adopted by previous FCMs.

One of the first approaches was to attempt to make the Contest Column more interesting and provide more useful information for both contestants and others who are perhaps not so interested. To this end I began a series of articles regarding contest techniques, log-keeping, station layout, etc. I also provided advice regarding Field Day operation.

Amongst other things I asked for information from Divisions and members. From the former, not much, if anything, was forthcoming. However, some individual members responded.

I wished to see some changes to contests and yet, at the same time, desired to achieve stability of rules. I feel that these objectives were achieved, with the noted exception of the Ross Hull Memorial Contest, the lack of support for some having, for many years, been most disappointing. Changes which were made included shifting the timing of the VK Novice Contest to the month of June, which was designed to help with operation on the "main" Novice band of 80 metres. (It is certainly a winter-time band) and moving the Field Day Contest to late March rather than the contest held during the high fire danger month of February. It would appear that these changes have paid off.

I also believed, and still maintain the opinion, that there are too many contests (count up the Contest Calendar for a year sometime if you don't believe me!), and I fought quite a battle to have the CW-only contest disbanded following its inception as an initial anniversary contest. Fortunately, Federal Council eventually saw the commonsense in what I was trying to convey. I did find some difficulty in having matters dealt with and agreed to by Federal Council. There always seemed to be an inordinate delay in having matters dealt with. Guidelines, whilst now available, need to be just that, flexible. It is really necessary if a good job is to be done. There is also a need for Federal Council to take proper notice of recommendations from the Federal Contest Manager. His advice should be probed and tested but taken seriously. I have attended quite a number of Federal Conventions and have never ceased to be amazed at the number of people who become "instant experts" in all aspects of amateur radio. Background material should be carefully considered, and, if necessary, matters should be referred back for further advice before any decision is made where any doubt exists. Along with this approach comes the need for the system to be made more streamlined to allow greater flexibility and speed in decision-making. In this way we may be able to shake off some of the taint of "old fogeyness" of which the WIA is sometimes accused. I might add the point that, where Federal Officers as employees, albeit voluntary, of the Institute are involved and listening to their advice is concerned, you "should not keep a dog and bark yourself".

Amongst other matters I have tried to implement have been printed log sheets specifically for contests, provision of additional prizes and trophies, and separate trophies for Phone and CW in the Contest Championship Series. Later on, I believe, on the way, whilst the other matters will be left to my successor to deal with along with the problems concerning the Ross Hull Contest and having the Field Day Contest broken down into two further contests.

Now, the above comments might sound like a gripe and perhaps they are in some small way. Rather than have you believe that I leave the position with a bad case of sour grapes, I would explain that I am a realist. I never did expect that everything I thought was right had to be accepted by others as such. I mention that matters concerned merely to try and provide some basis for yet further discussion where interest exists in working towards further improvement for the betterment of our hobby generally and not only contesting to the exclusion of all else. In some small way, what I have written may serve as a record of some use to other historians.

I have enjoyed the task of Federal Contest Manager and have had the value of experience from doing what I have been able to do.

I would also like to acknowledge help that I have received from some individual members. In doing so, I wish also to express my thanks generally to all who have written or telephoned with ideas and questions. Specifically I refer to Bill Rice VK3ABP, our Editor, for whom I have great admiration and respect, both for a wide general knowledge, as well as his high ability in his professional field. I must also thank Ken VK5WH and his wife Betty who have done a great deal of work which is unknown to many in keeping our magazine going. Ken has always provided me with useful advice as to the preparation of material for typesetting Reg Macey, our ex-Secretary/Manager and Earl Russell VK3BER, have always been of great help. I must acknowledge that constant contribution of Frank Anzalone VK5WY, and the useful advice and discussions are able from my contacts with Jack White ZL2GX. My relations with Federal Executive have always been excellent and I thank those members who have been so co-operative as well as commend them for their mighty efforts put in on behalf of us all. Throughout all of my term I have been able to have access to our VK5 Divisional Federal Council and our Divisional President. Their encouragement and advice has been wonderful.

Certain individual members I would mention are Jim VK2BDS, who has been one of my most loyal supporters. Les VK3ZBJ, has always been prepared to submit useful comment on VHF/UHF matters. Les, in fact, went to the effort of paying me a personal visit last year to discuss contest matters.

I could not let the opportunity pass to express my thanks to Eric Jamieson VK5LJ, for all his help in trying to sort out rules, etc., and endeavour to make some sense of the Ross Hull Contest. I trust that our efforts will not have been in vain and that some good may eventually come out of the work that has been done.

I have made many friends on the air and might say that I have never experienced any form of unpleasant comment on the bands. Rather I have contacted met with kindness, interest and encouragement. The same can be said of most comments provided with logs and other letters received by me.

I have not always replied to letters direct, but again I can assure you that, where you have not received an answer via this column, your letter has not been ignored. Many of you have provided a resource which has been used to try and improve our hobby. For your help and support I am indeed grateful.

As stated elsewhere, I am not dropping the provision to some extent of continuing to publish regular schedules with him and I am sure that a smooth changeover will result. As part of this "tailing off" I will be completing the handing of the VK Novice Contest and the production of all certificates up to, and including, this contest. Should you have any queries involving contests to this stage you can still make contact with me and I will do my best to sort matters out.

I will naturally be involving myself in other activities with perhaps a little respite from deadlines, etc, and I will certainly be continuing with contesting albeit with a limited amount of time available for such events.

As from next month, the September issue, the new Federal Contest Manager will be able to introduce himself to you. I am sure that he will be able to improve further the contest scene here in Australia. I am also sure that he will have many more good ideas to put into practice and that a new approach to the task will indeed be most beneficial.

I commend to you the value of providing support and trust that you will continue to provide the kind of support that I have received over the past three years.

I would like to finish this contribution to the column by providing you with a portion of the text from my Annual Federal Contest Manager's Report to the 1987 Federal Convention, as follows:

"FINAL COMMENT"

"At this time my term of office as Federal Contest Manager is almost concluded. I would expect that my final contribution to *Amateur Radio* magazine in this office will be for the August 1987 issue.

I will as intimated in an earlier portion of this report, ensure that any loose ends are tidied up and that the new incumbent will be able to commence his duties with a clean slate. I will also continue to be available to provide any advice and counsel should it be requested.

"I wish the new FCM, whoever he/she may be, all the very best in the position.

"I have enjoyed the privilege and experience which has been made available to me by virtue of having held the post of FCM for the last three years. There have been times when some strain has been evident, however this has been compensated for by the remarks of encouragement and appreciation received from time to time from individual members. Such cases have far outweighed in quality and number the complete reverse.

"I have tried, as FCM, to bring an air of rationalisation and improvement and feel that I have achieved many of the goals which I set. I have also attempted to make the contesting scene interesting for all concerned including readers who are not primarily interested in contesting. I am rather glad though, that the Australian contest scene does not have the "rat race" characteristics which I have observed in some countries, both during my various trips abroad and in my on-air contest experiences.

"I have been happy to be able to serve my fellow amateurs in some way and must indeed admit to some slight sadness of thought due to my term having concluded. I do have many other commitments which carry a very great priority over anything else and I do look forward to some possible relaxation of the load upon my shoulders.

"Last, but not least, I would wish to claim that I have attempted to bring to my own small sphere of amateur radio a level of balance and also of the higher values and ethics which I believe we should put into practice as a normal part of our daily lives. I do not hesitate to state my beliefs that these standards of values and ethics are based on Christian principles.

"I wish the Federal Council, our Federal President and all members of the Executive the very best for the future and express my wish that your deliberations will always result in the best possible outcome for the benefit of amateur radio in both this country and on a world-wide basis.

Signed: Ian J Hunt VK5XQ
FEDERAL CONTEST MANAGER"

FINAL, FINAL

I would like to wish each and every one of our members and all amateur radio operators generally, the very best in their efforts associated with our hobby. I would like to think that, for you, amateur radio will always be a rich and rewarding experience and also that you do not allow it to

cause difficulty between yourself and your family or neglect of any other responsibilities. I would hope that our hobby will become a shining light to the rest of our community as an example of co-operation and service.

To each of you, my warmest greetings.

73 de Ian VK5XQ

YL/OM SUMMER SSB SPRINT

Time period from 1800 to 2200 UTC, Saturday August 1.

As the name implies, this is a four-hour "shorty" organised by the YLRL. Only contacts between YLs and OMes count, on all HF bands, no nets or repeaters and a power limit of 1500 watts PEP (A little more than VK stations are allowed, anyway). EXCHANGE: Call, RS, name and state, province or country.

SCORING: (A) One point per QSO. Same station may be worked once on each band. (B) Alphabetic multiplier. Using the last number and the first letter following that number of the call, as W1XZ is 1X, W2GLR is 2L, 9VAA is 4A, etc. (An unusual method for multipliers and somewhat of a novelty, I feel — FCM). (C) Low power bonus of 1.5 for stations using 200 watts PEP or less at all times. (D) Final Score — total QSO points (A) times the multiplier (B) times low power bonus (C) if applicable.

FREQUENCIES: 3 955, 7 255, 14 265, 21 396, 28 595 MHz, plus 30 and 15 kHz.

AWARDS: Certificates to the three highest scoring YLs and OMes, and to the highest scoring YL and OM in each US district, VE Province and DX Country (Minimum of 10 valid contacts). Print or type logs and show scoring. Operators signature is requested. All entries must be received by September 1, 1987, and should be sent to Mary Lou Brown, NMTV, 5041 Channel View Drive, Anacortes, WA, US 98221.

Whilst speaking of YL organised contest, I would like to add a little advertisement for the ALARA Contest to be held in November. I would suggest that you keep this well in mind. The rules should appear in the October issue of *Amateur Radio*. This is a really good contest and it deserves your utmost support (FCM).

CONTEST DISQUALIFICATION CRITERIA

A standardised approach is taken to the disqualification of logs entered in all of the contests which come under the direct control of the Federal Contest Manager appointed by the Federal Executive.

A perusal of these criteria will show them to be quite fair and well thought out. They are based on those used by the ARRL in administering their contests. It is suggested that you take note of this particular issue of the magazine for reference to these general rules in the case of all contests for the ensuing year. Details are as follows:

DISQUALIFICATION — An entry in WIA conducted contests may be disqualified if, upon checking of logs, it is necessary that the overall score be reduced by more than two percent. Score reduction does not include correction of arithmetic errors. Reductions may be made of unconfirmed QSOs or multipliers, duplicate QSOs or other scoring discrepancies. An entry will be disqualified if more than two percent duplicate QSOs are detected as being claimed for credit. For each duplicate or mis-reported sign removed from the log by the Contest Manager, a penalty of the deletion of three additional QSOs of equivalent value to the offending claim may be applied. The penalty will not be considered as part of the two percent disqualification criterion if a participant is disqualified under these above-mentioned provisions that operator will be barred from entering the contest for that particular mode in the ensuing year; eg disqualification from the 1987 RD Contest, Phone Section will prohibit an entry for the 1988 RD Contest, Phone Section. However, participation in the 1988 RD Contest's CW Section would be allowed.

Logs which are very untidy, illegible or incorrect in layout to a major degree may also

be disqualified. The call signs of disqualified participants may be listed in *Amateur Radio* magazine, together with the contest results.

THE 11TH WEST AUSTRALIAN ANNUAL 3.5 MHz CW and SSB CONTESTS

Transmitting and Receiving

DURATION
CW — Saturday and Sunday, August 15 and 16.
SSB — Saturday and Sunday, September 19 and 20.

On both days between the hours of 1100 and 1330 UTC, as five operating hours in all for each contest.

FREQUENCIES
All contests to be made in the 3.5/3.7 MHz band using frequency allocation applicable to your licence conditions.

CALLING

Stations will call CQ WAA using the three times three technique, infringement of this rule by the use of long CQ calls may entail disqualification as well as prearranging of a QSO.

SCORING

Points for contacts are as follows:
Within Western Austral — five points per contact
WA to all Mainland Eastern States — two points per contact

WA to VK7 — four points per contact

WA to VK0 and Overseas — eight points per contact

Three points per contact with WA stations only.

MULTIPLIER

A multiplier of two per Western Australian Shire worked will apply to the final score. For Western Australian stations north of the 28th Parallel a multiplier of 1.3 per contact confirmed.

CONTACTS

Stations may be worked twice on each night; ie once between 1100 and 1300 UTC and again between 1300 and 1330 UTC. These contacts will count for points. Each time the contact for WA stations will take the form of an exchange of five characters comprising RS/T and Shire letters.

eg station in Northern shires 579NM or if in Harvey 579HY, the helps towards the Worked All Shires Award. Eastern states and overseas stations will send RS/T plus a running number start at 001.

LOGS

Contest logs are to be set out on one side of a quarto or folio sheet with columns headed as below.

DATE:	CALL:	OPERATOR:
TIME UTC	CALL-SET IN-OUT W/L- D	SHIRE LETTERS
	SHIRE MULTIPLIER	POINTS CLAIMED

Column seven to be filled at the foot of the each page and the running total brought forward. The last page to contain the following summary: Total number of points scored, Input power, Equipment and Antennas used, along with comments on the contest in general.

SWL participants score as above using the overall transmit score.

All logs to be addressed to WAA Contest Committee, 42 Kennedy Street, Melville, WA 8155 and posted so as to reach the destination not later than October 16, for both contests. The results for both contests will be published in December's issue of *Amateur Radio*.

SHIRE LETTERS

1. Albany Town	AT	73. Leathers	LA
2. Albany	AL	71. Mandurah	MA
3. Armadale	AD	72. Manjimup	MP
4. Augusta Margaret River	AM	72. Meekatharra	MR
5. Busselton	BA	74. Nairnie	NA
6. Busselton	BU	75. Narrogin	NR
7. Duncraig	DU	76. Northcliffe	NC
8. Dunsborough	DD	77. Northampton	NA
9. Dunsborough	DD	78. Nowa	NO
10. Dunsborough	DD	79. Nowa	NO
11. Dunsborough	DD	79. Nowa	NO
12. Dunsborough	DD	79. Nowa	NO
13. Dunsborough	DD	79. Nowa	NO
14. Dunsborough	DD	79. Nowa	NO
15. Dunsborough	DD	79. Nowa	NO
16. Dunsborough	DD	79. Nowa	NO
17. Dunsborough	DD	79. Nowa	NO
18. Dunsborough	DD	79. Nowa	NO
19. Dunsborough	DD	79. Nowa	NO
20. Dunsborough	DD	79. Nowa	NO



Awards

Ken Hall VKSAKH
FEDERAL AWARDS MANAGER
St George's Rectory, Alberton, SA 5014

ROARS 15TH ANNIVERSARY 1972-1987

The Royal Omani Amateur Radio Society, which was formed under the gracious patronage of His Majesty Sultan Qaboos Bin Sa'ud AKA, is happy to announce a special program for their anniversary.

To celebrate the event, the Society will operate a four-day non-stop special event station on from 0200 UTC, Thursday November 5, 1987 to 0200 UTC, Sunday November 8, 1987, using the special call sign A4XXV.

Operation will be on the 160, 80, 40, 20, 15 and 10 metre bands using SSB, CW, RTTY and AMTOR. A special and exclusively designed award will be available for all operators who can satisfy the following conditions:

- i Work or hear A4XXV on two different bands or two different modes
- ii Claim by certified log extract
- iii Award Fee of 10 IRCs or equivalent
- iv Award deadline June 20, 1988
- v Claims to The Awards Manager ROARS, PO Box 981, Muscat Sultanate of Oman

ROARS will be looking for radio amateurs in all countries.

—Contributed by A. Razak A. Shihawazi A4XXV Chairman

TEGA ELECTRONICS PTY LTD

SPECIALISTS IN RADIO FREQUENCY EQUIPMENT

Catering for
**AMATEUR,
COMMERCIAL,
GOVERNMENT**

Call in at:
**75 Grand Boulevard,
Montmorency, Vic.
3094**
or phone
(03) 431 1153
Gary VK3ZHP

24. Capel	CL	66. Narroben	NR
25. Cammah	CM	67. Narrong	NR
26. Carrivon	CR	91. Narrong Town	NR
27. Chapman Valley	CV	92. Nedlands	ND
28. Chatterley	CH	93. Newham	NE
29. Claremont	CT	94. Northam Town	NT
30. Cockburn	CK	95. Northampton	NO
31. Colac	CO	96. Nungah	NU
32. Coolgardie	CG	97. Peppermint Grove	PG
33. Coonow	CW	98. Perth	PT
34. Craigie	CR	99. Perth	PT
35. Collingwood	CO	100. Presbury	PP
36. Cranbrook	CK	101. Plantagenet	PT
37. Cullalbyn	CU	102. Port Hedland	PH
38. Coober Pedy	CP	103. Portland	PL
39. Dandenong	CD	104. Ravenshoe	RV
40. Dalwallinu	DU	105. Reventon	RE
41. Deception Bay	DB	106. Robina	RO
42. Denham	DN	107. Sandstone	SD
43. Denison	DE	108. Serpentine Jarrahdale	SS
44. Denham	DN	109. Sherrin	SH
45. Denham	DN	110. South Perth	SP
46. Denham	DN	111. Strling	ST
47. Denham	DN	112. Subiaco	SU
48. Denham	DN	113. Swan	SW
49. Denham	DN	114. Tambellup	TP
50. Denham	DN	115. Temora	TM
51. Denham	DN	116. Thero	TH
52. Denham	DN	117. Torquay	TT
53. Denham	DN	118. Traralgon	TR
54. Denham	DN	119. Upper Eslington	UE
55. Denham	DN	120. Victoria Plains	VP
56. Denham	DN	121. Wagon	WG
57. Denham	DN	122. Wandsworth	WD
58. Denham	DN	123. Wanneroo	WN
59. Denham	DN	124. Warrnambool	WR
60. Denham	DN	125. West Arthur	WA
61. Denham	DN	126. West Wimmerie	WW
62. Denham	DN	127. West Wimmerie	WW
63. Denham	DN	128. Winton	WI
64. Denham	DN	129. Winton	WI
65. Denham	DN	130. Williams	WL
66. Denham	DN	131. Williams	WL
67. Denham	DN	132. Williams	WL
68. Denham	DN	133. Williams	WL
69. Denham	DN	134. Williams	WL
70. Denham	DN	135. Williams	WL
71. Denham	DN	136. Williams	WL
72. Denham	DN	137. Williams	WL
73. Denham	DN	138. Williams	WL
74. Denham	DN	139. Williams	WL
75. Denham	DN	140. Williams	WL
76. Denham	DN	141. Williams	WL
77. Denham	DN	142. Williams	WL
78. Denham	DN	143. Williams	WL
79. Denham	DN	144. Williams	WL
80. Denham	DN	145. Williams	WL
81. Denham	DN	146. Williams	WL
82. Denham	DN	147. Williams	WL
83. Denham	DN	148. Williams	WL
84. Denham	DN	149. Williams	WL
85. Denham	DN	150. Williams	WL

VK/ZL/OCEANIA DX CONTEST 1987

It is almost that time of the year again — the VK/ZL/Oceania DX Contest. Here are the year's rules. It would be appreciated if you would not only take an active part yourself, but also encourage all other amateurs and shortwave listeners in your area to do so.

Please advise all societies clubs and individuals where and whenever possible of this year's Contest. It would also be greatly appreciated if you could advise any technical, amateur, radio, electronic or shortwave listener magazines of this contest.

Should you have any Packet, AMTOR, or RTTY Bulletin Boards in your area, would you kindly place the contest rules on there as well.

If there is any way you can help or assist anyone with this contest or in fact any other amateur related matter please do leave a message on the VK4BBS Packet Bulletin Board Station on 14 107 MHz. A reply will be sent as promptly as band conditions allow.

Looking forward to receiving a log from you and many more from you in your area. Do enjoy the contest and make many new friends.

Brian Beamish VK4AHK/VK4BBS (Packet BBS M/Box)

1987 VK/ZL/Oceania Contest Manager
PO Box 254
Stones Corner, Qld 4120

FOR OVERSEAS ENTRANTS

1. SSB

With a 24-hour period from 1000 UTC Saturday, October 3 to 1000 Sunday, October 4, 1987, during which time a maximum of 12 hours operating time will be done — in one hour blocks based on "even hour to even hour" in UTC, eg 1000 to 1100 UTC or 1300 to 1400 UTC with minimum periods of one hour.

1a. CW

With a 24-hour period from 1000 UTC Saturday, October 10 to 1000 Sunday, October 11, 1987, during which time a maximum of 12 hours operating time will be done — in one hour blocks based on "even hour to even hour" in UTC, eg 1000 to 1100 UTC or 1300 to 1400 UTC with minimum periods of one hour.

Receiving SSB and CW Combined in the above times (maximum total 24 hours)

2. Only one contact per mode per band is permitted and all bands except WARC bands may be used.

3. SCORING

** For stations operating outside the Oceania, score two points for each contact with VK/ZL or Oceania stations.

** Oceania stations score two points for all contacts.

4. FINAL SCORE

Multiply total QSO points by the sum of all VK/ZL/Oceania prefixes worked on all bands. (The same VK/ZL/Oceania prefix worked on a different band counts as a different unit).

NE Oceania stations are those which qualify as Oceania for WAC.

5. CIPHERS

Five or six digit numbers composed of RST report plus a three digit sequence number beginning at 001 and increasing by one for each QSO on that band.

6. LOGS

a) Separate logs for each band please and for SSB and CW.

b) Show date, time UTC, call sign of each station contacted, ciphers sent and received.

c) Underline each new VK/ZL/Oceania prefix.

d) State QSO points for each band.

e) State VK/ZL/Oceania prefix claimed on each band.

f) Summary sheet to show:

** Call sign, Name Address

** Total QSO points claimed on all bands.

** Total VK/ZL/Oceania prefixes contacted on ALL bands.

** Total points claimed.

** Declaration that rules were observed.

Post logs to: VK4AHK/VK4BBS (Packet), PO Box 254, Stones Corner, Qld 4120, Australia. Logs must arrive no later than February 15, 1988.

7. SWLs

A VK/ZL/Oceania station must be heard in a QSO — logs to be set out as for the transmitting section.

8. AWARDS

Separate awards for SSB and CW.

a) Special coloured certificate to the top scorer in each continental area.

b) Special coloured certificate to the top scorers in each country.

c) Participation certificates to all others on request (One IRC for postage please).

** Copy or relevant results available on request (One IRC please).

FOR VK/ZL STATIONS

Check with overseas rules.

Rules 1, 2, 5, 6 as for Overseas stations except:

in Rule 6

3. VK/ZL stations are permitted to contact each other only on 160 and 80 metres. VK/VK, ZL/ZL and ZL/VK contacts are all permitted on these two bands.

4. SCORING

Different points for contacts on different bands as follows:

160 metres — 20 points

80 metres — 10 points

40 metres — 5 points

20 metres — 1 point

15 metres — 2 points

10 metres — 3 points

Total score will be the total QSO points multiplied by the total number of prefixes worked. The same prefix worked on a different band is counted.

NOTE: K1, W1, AA1, N1, etc, are all different prefixes. W1AA1/G would count as W16 not W16 6 CHANGE

Logs to arrive no later than December 5, 1987

7. SWL SECTION

As for overseas but...

** VKs must hear and log ZL or other stations (no VK stations)

** ZLs must hear and log VK or other stations (no ZL stations)

** ZL/VKs do not log each other

8. AWARDS

Separate awards for SSB and for CW.

a) Special coloured certificates to top scorers in each prefix area and to top scorers on each band.

b) Participation certificates to all others on request. (One IRC or \$1 for postage, etc, please).



TECHNICAL MAILBOX



A letter from VK2DDL poses the following question:

I wonder if you can enlighten me on the following matter.

I find that some manufacturers of receivers and transceivers, particularly those for VHF or UHF operation, specify their receive sensitivity in terms of the signal voltage at the input (usually in the order of one microvolt or less) required to produce a signal plus noise/noise ratio of 10 dB or 12 dB, while others quote a noise figure in dB which may be anything from 0.8 to 4 or 5.

However, I have not been able to discover any text or formula explaining how to convert from one form to the other, so that comparisons become difficult. I have attempted to convert the former to the latter by calculating the equivalent noise voltage in a particular specification, converting this to a noise power value at the relevant input impedance and inserting this value in the formula for determining noise figures. The resultant noise figure based on this calculation has been below that quoted for the input transistor in data books, so I am obviously over.

I have also noted that the SINAD figure has been quoted for FM equipment as 'PD', which I assume means at peak deviation, but I would be interested to know if this means at a bandwidth capable of containing the maximum peak-to-peak deviation on or more than one half of that bandwidth. (eg noise a deviation of ± 7.5 kHz imply a bandwidth of 15 kHz or more, ± 7.5 kHz?)

I look forward to seeing the answers to this inquiry in a future issue of *Amateur Radio*.

S V ELLIE VK2DDL

VK2DDL has opened up a real can of worms!

Basically what you wish is a direct comparison of performance between one piece of equipment to another. Manufacturers seem to delight in publishing specification figures which can confuse, or in some cases, obscure the issue.

Commercial equipment (eg Land Mobile, Personal Portable Marine, CB, etc) in this country is required to meet the Standard of Communications (DOC) Standards. Equipment is then approved to the relevant Standard and saved with an approval number. The reason for such a system is complex. In simple terms it provides a means whereby frequency allocations can be derived from the knowledge of known minimum technical equipment standards. In this way compatibility between services and efficient spectrum management may be achieved. In fact, frequency allocations can be made by computer when based upon defined minimum equipment standards.

Amateur equipment has traditionally been exempt from such requirements due, in the main, to the fact that amateurs traditionally built their own equipment. Such is not always the case today.

It has become apparent over the last decade that commercial manufacturers of amateur equipment have pressed for deregulation of commercial specifications, thus enabling them to sell their lines to the commercial market.

Unfortunately for the amateur, most of the equipment manufactured has not seen technical advancements aimed towards commercial specifications. There has been an attempt to convince authorities to reduce their requirements. These, we hasten to add, are minimum requirements based upon internationally recommended standards (IEC) aimed towards efficient spectrum management. One would think that as technology advances, specifications would be tightened to reflect the greater use of the spectrum. Alas, the mighty dollar and deregulation pressures are simply causing a reverse effect.

Why do we mention such matters in responding to VK2DDL's letter? Well, it goes back to the opening paragraph — "Manufacturers seem to delight in publishing specification figures which can confuse or in some cases obscure the issue." The cold hard facts are that most amateur equipment does not come within a "bull's roar" of

such minimum specifications. Considering today's amateur population and the band crowding that exists, this appears to be an anomaly. Manufacturers most likely would try to defend themselves on the cost of such improvements, but this is really not a defensible issue. Such improvements should not increase the cost of equipment to the extent most claim.

We, as amateurs, suffer! As black-box buyers, in a limited production market, there is little choice of what to buy, that is if an individual can afford the expenditure these days! Are you attracted to and make your choice purely on the ever increasing options, which are rarely used, that predominate the sales pitch?

Take the general coverage receiver options offered in most HF transceivers. Great! If you analyse how this is achieved it will be found that it is not the receiver aspect of the design that a manufacturer has foremost in mind but the broadband transmit option deliberately built into the equipment. To satisfy Australian authorities and qualify for reduced import duty this option must be achieved by techniques which are unexcusable to reverse. Such a requirement does not apply to many other markets for which the manufacturer caters.

It is important to note that in any specification, a method of test should form part of the specification, otherwise considerable confusion will arise from the interpretation of the results.

In amateur circles many people would first consider, as a receiver comparison, the ability to detect weak signals (receiver sensitivity). If you choose your receiver by such a comparison alone you will most likely not get what you want. The ability of a receiver to handle strong signals (blocking and cross modulation), adjacent channel signal rejection, spurious responses and selectivity are some of the basic factors one should consider.

You may have the most sensitive receiver in your area but find it useless when your local amateur or commercial operator hits the ether and it does not have to be on the same band! There are more poor receivers around than transmitters! Receiver design is a science where short cut cost compromises will greatly affect the end result. It is annoying to see manufacturers promoting the gimmick features instead of producing a high performance receiver.

Do you, as an amateur or SWL, select your equipment purchase on the number of memory channels alone?

Possibly, because most of the relevant comparison specifications are not published. Manufacturers cannot be blamed for not publishing their third order intercept figures for example, as sales may plummet. As such, the purchaser wears it and then blames the other station for splatting or the local Paging Service for wiping out the two-tone band!

Now, after climbing down off the 'soap box', back to VK2DDL's letter.

The questions raised in this letter were discussed with others and particularly with an amateur who is an acclaimed expert in such fields and was most gracious to provide a concise explanation on the matters raised, as follows.

In order to answer fully the question on receiver sensitivity specifications, it is necessary to determine the input signal level required to produce a 10 dB signal to noise ratio from a two-tone SSB receiver with a bandwidth of 2.5 kHz and a noise figure of 3 dB. Finally, it is necessary to consider some aspects of noise figure (NF) concepts.

Noise Figure is a measure of the degradation in signal to noise ratio between the input and output ports of a two port network, such as our receiver.

Noise Figure is essentially a ratio, so in order to compare it with an absolute value measurement, it is necessary to define an absolute value of input signal at which the noise figure is measured.

This absolute value of input level is given in the

IRE (later the IEEE) definition of noise figure and is the level of the noise available due to thermal agitation at a standard temperature of 290 degrees Kelvin. This is close to the temperature seen by our receiving antenna when it is directed at the horizon and it is also close to room temperature, at least in the colder climes of the Northern Hemisphere.

We can thus place a value on this noise power (Np) it is equal to kT_b Watts per Hertz

$$\text{where } k = \text{Boltzmann's Constant} \\ = 1.38 \times 10^{-23} \text{ Joules/Kelvin} \\ \text{and } T_b = \text{Temperature (290 degrees Kelvin)}$$

For convenience this is expressed here in decibels below one milliwatt (dBm)

$$N_p = 10 \log 1.38 \times 10^{-23} \times 290 \times 10^3 \\ = -174 \text{ dBm/Hertz}$$

This is a useful figure to commit to memory.

The example receiver has a bandwidth of 2.5 kHz, so the total amount of noise getting through it will be 2500 times -174 dBm. In dBm this is

$$N_{\text{total}} = -174 + 10 \log 2500 \\ = -140 \text{ dBm}$$

Since NF is a measure of the degradation in Signal to Noise ratio (S/N) and since the method of degradation is the addition of noise by the receiver, the NF is added to the above to arrive at the 'noise floor' of the receiver.

From the above example

$$\text{Noise floor} = -140 + 3 \\ = -137 \text{ dBm}$$

The example receiver specification called for a 10 dB S/N, so a further 10 dB signal must be added to the noise floor as determined above.

$$-137 + 10 = -127 \text{ dBm}$$

This can be converted to microvolts to compare it to other receiver specifications. If the input resistance is known. Generally this is 50 ohms.

From Ohm's Law

$$E = \sqrt{PR}$$

and it follows

$$E (\text{microvolts}) = \sqrt{50 \times 10^{-12} / (15710) \times 10^4} \\ = 0.1 \text{ microvolts} \\ (\text{approx/matrix})$$

To summarise, add 10 times the log of the bandwidth, the signal to noise ratio in dB, the noise figure in dB and -174 dBm to arrive at the signal level required to obtain that S/N. Then convert to microvolts if required.

The sample receiver in this case requires 0.1 microvolts for the signal to noise ratio.

A few points worth bearing in mind

1. S/N = (S + N)/N, 1 as ratios. To find the input level required for a 10 dB S + N/N add 10 log (10 · 1) to the noise floor (95.4 dB). This is not very important in most cases.
2. An improvement of 1 dB in noise figure is equivalent to increasing the transmit input power by 1 dB in the case of systems with a receive antenna temperature of 290 degrees Kelvin, ie systems where the antenna looks at the horizon.
3. Noise figure is not concerned with modulation systems, unlike SINAD for example.

The Technica Mailbox group express their sincere thanks for the expert, concise and easily understood answer which should interest all readers.

Finally, VK2DDL asks about PD. The answer here could be twofold, as an example is not given to clarify the question.

It could mean, as you say, peak deviation in this case it would mean that a ± 7.5 kHz would imply a bandwidth of 15 kHz. The implications of such a specification are quite profound for it

introduces the characteristics of receiver performance with respect to a modulated signal in this way a 'dynamic comparison' may be achieved by such a technique. This is an excellent method of defining the true performance of a receiver in the real world. It is also briefly mentioned in three above.

Another explanation of PD could be potential difference. That is the voltage level when measured across the terminated input impedance of the receiver.

At this proves is that specifications are only as good as the method used to arrive at a figure and this 'figure' must be derived from a meaningful baseline.

It is thought prudent to expand a little further on point two of the answer to the first question.

The noise floor is the absolute limit one faces when trying to detect weak signals, without going into sophisticated techniques where one can go below the limit. In practical terms one can reach a point where lowering the receiver noise figure will not provide an increase in usable receiver sensitivity when at one's antenna, a pointing at the horizon. This however is not true when the antenna is elevated above the ground where, providing it is not 'starving' at a stellar noise source, the usable noise figure then becomes the actual noise figure of the system. EME operators are most concerned with such matters. When dealing with weak signals and marginal communication, the ground noise may be greater than the wanted signal. However, once the antenna is raised, as the Moon rises, a signal of sufficient amplitude will become readable.

The Earth is one big ball of noise, be it at 290 degrees Kelvin!

Please Note: Technical Mailbox requires more questions to keep the group on their toes. Readers please submit your queries.

MORSEWORD 5

Compiled by Audrey Ryan
30 Stirling Street, Montmorency, Vic. 3094

ACROSS

- 1 Exclamation of surprise
- 2 Be afraid of
- 3 Informer
- 4 Strong wind
- 5 Arab Republic
- 6 Immense
- 7 Dr
- 8 Stalks
- 9 Brief records
- 10 Spigots

DOWN

- 1 Standard
- 2 Part of the eye
- 3 Increased
- 4 Thick mist
- 5 Nest
- 6 Murmur of doves
- 7 Skin disease
- 8 Relieves
- 9 Hybrid animal
- 10 Festivals

© Audrey Ryan 1987

Solution page 63

	1	2	3	4	5	6	7	8	9	10
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

Magazine Review

Roy Hartkopf VK3AOH

34 Toolangi Road, Alphington, Vic. 3087

Q Generators
C Construction
P Practical without detailed constructional information
T Theoretical
N Of particular interest to the novice
X Computer program

BREAK IN — May 1987. Conference Report (G)
QRP Article (G)

QO AMATEUR RADIO — April 1987. Special Antenna Issue (G & N)

QST — April 1987. Home-brew Hardline Connectors (P) New American Examination Questions (G & N) Home-brew Antenna Hardware (P & N) Messy Shack Photographic Contest (AF)

RADIO ELECTRONICS — May 1987 Electronics in the Next Century (G) Loran (G) Soldering — New Technology (P & N)

SHORT WAVE MAGAZINE — March 1987. One Valve Shortwave Radio (G) Annual Index (G) Compact Helical Antennas (P & N)

SHORT WAVE MAGAZINE — April 1987. Now a magazine for the Shortwave Listener. Some columnists gone to Practical Wireless.

VHF COMMUNICATIONS — 4/1986 Satellite Receiving System (C) Wideband VCOs (C)

WORLD RADIO — April 1987. American Novices get more (G) World Amateur Radio News. General Information on Amateur Happenings (G)

73 MAGAZINE — March 1987. 7 MHz QRP Pocket Transceiver (C)

73 MAGAZINE — April 1987. Special Antenna Issue (G) Tower Hazer Unit (P)

Intruder Watch



Bill Martin VK2COP
FEDERAL INTRUDER WATCH CO-ORDINATOR
33 Somerville Road, Hornsby Heights, NSW. 2077

Many reports were received during April 1987, regarding the activities of intruder stations on 28 MHz, originating in Asia. This problem will continue to escalate and we have taken some steps to try to do something about it. However, if we do not receive reports on these activities we certainly have nothing to complain about to other administrations.

Reports received for the month were from VK1WX, VK2s DEJ, PS, Arthur Bradford, VK4s AKX, BFO, BG, BHJ, BTW, DA, KHO, OD, VK5s GZ, TL, VK6RO, VK7RH; VK8s JF and HA.

There were 171 intruders reported using AM mode (A3E), 184 using CW (A1A), 50 using RTTY (F1B), 11 using different modes and 33 intruders gave their call signs on-air. This announcing of call signs on-air by the intruders is a fair indication of the measure of respect they give to the frequencies of services other than their own. In other words, they blatantly use the amateur

bands, give their call signs, and tacitly state 'We here we are on your bands, what are you going to do about it?' I can assure you that the Intruder Watch does something about it, but the Australian Administration leaves a little to be desired at their end. We keep hoping that this situation will change.

CH2BLU reports that Radio Tirane 'seems to have reduced transmissions on 7055 and 7030 MHz' as heard at his QTH. DJ9KR confirms this as heard in West Germany. His summary of activity for April also nominates the call sign of ROQ 45 as being on the 'V' beacon station on 7002 MHz. Does it really surprise anyone to note that the call sign commences with an 'R'? So, we continue to monitor the bands, and hope that the amateur population will keep us informed of what they hear. See your next month, good DX and 73.

Bill VK2COP



QSP

NOVICE ENHANCEMENT

THE FEDERAL COMMUNICATIONS Commission (FCC) has announced that it will enhance the Novice licence grade in the United States of America.

New bands and new privileges for Novices will include SSB and Digital privileges in a portion of 10 metres, and access to all authorised modes (including use, but not licensing, of repeaters) in portions of the 220 and 1270 MHz bands.

The full specifics of the enhancement were to be released soon by the FCC.

The ARRL had sought the enhancement to make the Novice licence more attractive to a wider range of people and relevant to today's technology.

In its supporting new privileges and modes for Novices, the ARRL pointed out that it believed this grade of licence should be permitted to hook up computers to amateur station equipment.

The US Novice will be permitted to operate RTTY, ASCII, Packet Radio and other digital modes, and the enhancement also means all grades of US licence now share common bands.

Electro-Magnetic Compatibility Report



RFI IN GREAT BRITAIN — WHERE DO WE STAND (IN DL)?

by Hans Kreuzer DL1AN, CQ-DL 3/87 p 168
(Translated by VK2AOJ)

Hans Ruckert VK2AOJ
EMC REPORTER
25 Berrille Road, Beverly Hills, NSW. 2209

Since January, radio amateurs in Great Britain have received a standard letter from the authorities (DTI), when their neighbour's equipment was affected by their transmitter. The letter contains recommendations on how to overcome the RFI, and the amateur is asked to report within one month that the problem has been overcome to the satisfaction of the neighbour. Otherwise the Radio Investigation Service (RIS) will inspect the station (not the neighbour's equipment for susceptibility, or his/her willingness to co-operate) and decide which measures have to be taken. A change of licence could be considered!

And worst, the complaining neighbour receives a copy of the letter. It must be feared therefore, that a non-co-operative neighbour would see no need to do anything themselves, because the letter seems to imply that it is the amateur's fault which is causing the interference.

The regulation which determines the procedure, appears to be the equivalent to paragraph 9 of our administration regulation DV-AFuG. It was issued without consultation with the RSGB and was apparently not published. Only on the 20-2-1986 did the RSGB receive a copy during a meeting 'handed across the table'. The RSGB stated then to DTI that the new guidelines were hopelessly against reality, and demanded their withdrawal. This DTI refused to do. Only a revision of the standard letter may be considered.

The RSGB now asks all members to send a copy of the DTI letter to its own investigation service. Counter measures, perhaps involving a legal process (court of law), are considered as necessary to avoid a drastic restriction of radio amateur activities.

The RSGB is of the opinion with regard to radiation immunity (of the equipment chassis), that the 18 Vm CEEL-Standard, which is being planned by the European Common Market countries, is exceeded by most transmitters (compare EMC Report AR January 1987, p 55-54). As stated by G3OUF 'The Amateur and the Government' News Bulletin of Radio Communication 4/86, (3V/m TEM cell test, Jacky in DL), there are

signs of a European vendetta against amateur radio. Similar reports have come from Belgium.

Where do we stand in (DL)?
When I look at the dubious paragraph 9 of our regulation DV-AFuG and the letter from FTZ (=DOC in DL) published in CQ-DL 2-86, I see little difference in the aims of the authority. Single-sided preference towards manufacturers, dealers and promoters of 'electronic devices for everyone'. The Post Office belongs to this group too.

DL2NL interprets these rulings in CQ-DL 4/86, to mean that the radio amateur is not and cannot be responsible for RFI from his fundamental frequency radiation (which complies with the law). If this was so, I could transmit freely using all the permitted 750 watts, because most RFI comes from fundamental radiation picked up by the equipment's chassis (PC boards and wiring). The transmitter harmonics can easily be suppressed. I doubt that I can rely on the DL2NL interpretation? In any case, the legal professionals involved are not likely to earn any laurels, if the law can be so differently interpreted. DL1AN

(See also AR January 1987 p61: RIS Problem)

BCI and TVI FROM A TV TRANSMITTER
Members of my family live in Riverbank Street, Lane Cove (A Sydney suburb). They complained that they could not receive the 2MBS-FM radio and SBS Channel 28 television. Investigation showed that the location was in a deeply cut valley into which the antenna from the Channel 10 television station looked down from about 2.5 km distance. Several neighbours had their television antenna pointing away from the television station, receiving reflected signals and ghosts from the opposite valley wall. The servicemen had installed the Hi Fi 'Hiatchi' FM tuner to the television antenna installed above the roof. Several ghost FM stations were heard between ABC-FM (92.9 MHz) and 2MBS-FM on 102.5 MHz, where none was actually transmitting. 2MBS was usually covered by interference. The problem was solved with a portable FM receiver by gradually reducing the length of the telescoping antenna from 100 to 20 cm, until the FM receiver front end was no

longer overloaded by the strong television signal.

The ghost stations had disappeared and 2MBS could now be clearly received. A series-tuned LC short wave-trap tuned to channel 10 would have helped too, if a longer antenna had been needed to receive the desired station with a good enough signal for stereo.

The SBS channel 28 television signal gave more or less unsatisfactory pictures (snow and ghosts) on two television sets (National and Sharp) in spite of the professional UHF beam installed above the roof of the two storey house. I made a 12 element long Yagi beam especially tuned for channel 28 using NBS-USA design methods. This worked much better than the other antennas. Three different locations were tried. This 12 element beam gave a good picture free of snow and ghosts only if placed in a critical position on a veranda installed above the roof near the other channel 2-10 Yagi the results were not good enough. After the experience with the FM-BC receiver, we tried in desperation a 'rabbit-ear' indoor antenna on top of the television set. It is still there, giving excellent reception with both television sets on channel 28! Who says that one must have a high gain beam above the roof? Perhaps one could save money.

We did not complain to DOC about Channel 10 causing TVI and BCI, nor was a court case started for nuisance or damages, as happened to VESPP (AR Feb 1987 and 'QST'). Could one of us suffer like VESPP in spite of DOC support?

Many frustrating cases would not occur, if radio and television manufacturers adopted the RF front end design methods of their colleagues who produce the modern amateur receivers/transceivers (Yaesu, Icom, Kenwood etc). Their designs result in very good dynamic range and intercept point values. They had to do it to overcome severe interference problems, and the same need applies to BC and television receivers too. How much longer will we have to wait for adequate and effectively policed EMC Standards combined with the necessary education of the public?

IAN J TRUSCOTT

ELECTRONIC WORLD

FOR ALL YOUR COMPONENT
REQUIREMENTS

MAIL ORDERS WELCOME

30 LACEY STREET
CROYDON 3136

Phone: (03) 723 3860

(03) 723 3094

EXTENSIVE RANGE OF ELECTRONIC COMPONENTS FOR THE RADIO AMATEUR, HOBBYIST & PROFESSIONAL Including AMIDON & NEOSID FERRITE PRODUCTS.

- STOCK DREW DIAMOND'S 4 WATT CW TX AND DC86 DIRECT CONVERSION RECEIVER FOR 80m (see AR Jul/Oct)
- AMATEUR REF BOOKS (RSGB & ARRL HANDBOOKS), VHF MANUALS, ANTENNA MANUALS & MOTOROLA NATIONAL DATA BOOKS
- FULL RANGE 27 MHZ & 477 MHZ CB RADIO & ACCESSORIES
- UNIDEN SCANNING RECEIVERS
- COMPUTERS
- WELZ TP-25A 50-500 MHz DUMMY LOAD — POWER METER





Pounding Brass

Gilbert Griffith VK3CGG
7 Church Street, Brighton, Vic. 3741

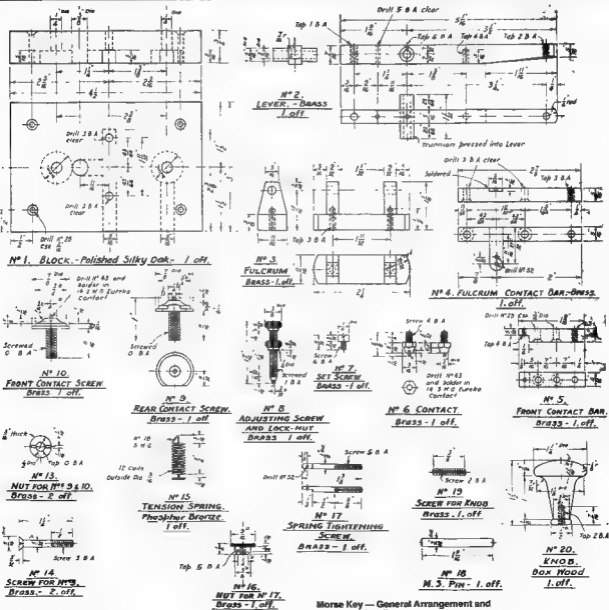
GM, GA as OE everyone. Yesterday I received a letter from Michael VK4BMD, on behalf of the Brisbane North Radio Club. They have a number of active Morse enthusiasts and meet on 3530 MHz at 0930 UTC each Tuesday. Regulars include VK4BPZ, VK4CAY, VK4NCM, VK4MWZ, VK4FTJ, VK2CHW and VK4BIL, as well as some listeners. Visitors to the net are welcome and they will QRS on request. There is also an award available for contacts with five members (VK) or three members (elsewhere). Write to their Awards

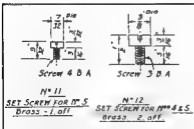
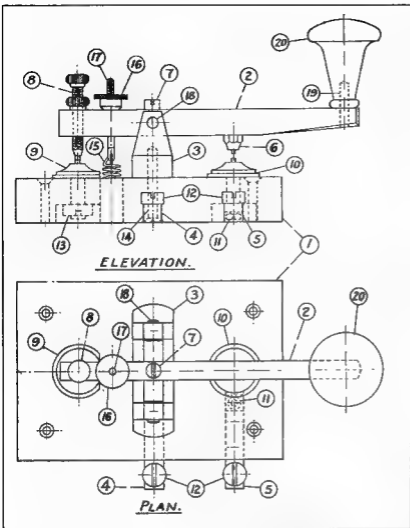
Manager for more details at PO Box 76, Chermaside, Qld 4032

Michael also sent me a production drawing for a brass Morse key which we include here for interested readers. His original is full size but it has unfortunately had to be reduced here. Thanks Michael and the North Brisbane Radio Club.

A few evenings ago I was having a chat with Phil VK3CDU, on 3520 MHz, a frequency where we can usually be found! These chats are becoming few and far between. We were having a little

laugh over some things heard during the recent contest, the CQ WW WPX CW Test. One particular station was calling frantically at about 36 WPM on 80 metres. Now, both Phil and I feel we are "pretty hot stuff" at receiving fast Morse, even with the computer switched off, but we commented that we had to listen to many repeats just to decipher the call sign. Admittedly, it did begin with a "K" so it was difficult to decipher the beginning from the end. Apart from the fact that, when someone finally answered at half his speed,





he did not QRS. We wondered at his operating strategy. We gathered that, assuming only 40 percent of amateurs could copy him, he is only going to score 40 percent of his possible score in the test? Or is he assuming that 80 percent of operators will not be in the test, anyway? I will consider this further in the Novice contest and the RD this month.

Contesting is one thing, but when you are rag-chewing, you never know who is listening. Maybe someone out there wants to talk to you. How many of us send our call sign like we write our signatures — illegibly? How many times do we have to listen to a repeated call sign before we can unravel it enough to call the station? How often do

we hear the interestingly long code 'characters' such as dahdahdahdahdahd?

The secret of the telegraph code is timing. Each element — dit, dah and space must be proportioned reasonably well in order to be intelligible. And, unless the letters are separated by the proper space, how can we tell for sure what letters they are? Words run together put a heavy burden on the writer in order to decipher them, don't they? By contrast, the well sent, properly proportioned signals stand out like landmarks of clarity. All VK4QL and Clive VK3CQL, to name a couple of superb senders.

Let us look at the problem of distorted code a little more fully, and from the intelligibility aspect. Most of us can read sending where the dits are too fast for the dahs — that is, the dahs are disproportionately long. They are a little distracting but not incomprehensible. On the other hand, there are those who make their dahs so short that, at times, they sound like dits — and that is troublesome. We can misunderstand.

Whilst it can be annoying, the occasional misspelled word or abbreviation can usually be understood and all of us slip up this way at times. It is no major stumbling block. And we sometimes send too many dits for characters like S, H and 5, also B and 6, etc. These are forgivable slips, and, in most cases, can be understood rightly!

But if it is lack of spacing of letters within words (and calls) and between words that cause most of our problems. Leave out the space between TT and it becomes M, similarly spacing errors can make ST sound like V (and vice-versa), G like ME, C like NN — and so the long list goes on. Does this happen because of wrong initial learning of each character as a distinct unit in itself? Or is it misplaced haste that leads to running letters together? Haste that leads to this only leads to unintelligibility.

Perhaps the commonest fault with spacing concerns the need to keep words separate. I sense, at times, that this is due to undue hurry to get the thought across. But, in so doing, the receiver is deprived of the key element in his reading and understanding — where each word begins. English is not an easy language to decipher when its word-beginnings are not marked.

Maybe, we can all profit from some or is (including new learners) in sending. Many years ago, Walter Candlar recommended the following to help us develop a good timing sense.

DRILL 1 — Send the letter S counting the dits as you send it, then keep counting up to say 12 and without hesitation send a second S, and so on until you have sent 20 to 25 of them. Gradually speed this up to dropping out one count, until normal letter spacing is reached (the length of one dit). Try it with the letter O etc. Both dits may be sped up as you send faster keeping the same spacing proportions.

DRILL 2 — Take a simple sentence sending it first with wider than normal spacing between the letters and words, and then gradually shorten these spaces to the normal length, being careful to keep the letters and words distinct. Eg, if a single dash represents longer spacing between letters and a double dash a longer spacing between words, it would go like this, g-o-o, d-s-p-a-c-i-n-g-i-s-e-a-s-y-t-o-r-e-a-d, etc. Then gradually bring it to normal.

A keyboard and an ambidextrous keyer will always make perfect characters with proper proportions between and among the internal parts. What is sent may be wrong, but it will "properly made" wrongness! But with an ordinary hand key or semi-automatic key there will always be some evidence of one's individuality. Let us not let it get out of hand. After all, the purpose of the code is to convey intelligence not to present the listener with a puzzle.

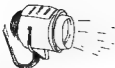
Let us not burden the listener with more than the QRM and QRN he is probably struggling with, by making our message garbled! As someone noted, we want code comes through interference much better than poorly sent code.

Reference: Wm G Pierpont NCHFF and MM

Finally, from Tony G4FAI. There is a movement to obtain a no-age limit Novice licence in the UK which would permit Morse-on-y operation on the 10 metre band with a transmitter output of five watts, preferably using a neoprene home-brew equipment. It is suggested that an eight week study course, covering theory and technical matters, at an appropriate eve, could be followed by a two hour examination set by the RSGB and Morse test at five word-per-minute conducted by local amateurs. The secretary of the campaign is Ian G3ZJY who says, "The idea has the support of the G-ORP Club, the Scouts, Sea Cadets, the RSGB and a number of radio amateurs. Further information is available from Ian at 52 Hollytree Ave. Mabley Rotherham S66 8DY, England."

73, G4 VK3CO

Hamads are a free service to members. See page 64 for details of how you may make use of this service.



Spotlight on SWLing

Robin Harwood VK7RH

52 Connaught Crescent, West
Launceston, Tas. 7250

Well, almost three-quarters of the year has passed and it certainly has been different this year from last time around. Conditions seem *very* improved and it has been officially confirmed that we have turned the corner and are into a new sunspot cycle, in mid-May the sunspot count rose to 50 on one occasion, before dropping back to 14, early in June.

Incidentally, Radio Australia now has a daily propagation report and forecast at 0425 UTC, which is repeated every four hours until 2025 UTC, except Sundays. A weekly propagation summary is included in *Talkback*. The report is presented by Mike Bird, in co-operation with the IPS and Space Services in Sydney. It includes the solar flux, the A index and the geomagnetic indicator — the K index for the previous 24-hours and also the predictions for the next day. This service has helped me to keep track with daily propagation conditions and RA is to be congratulated on extending this daily service to professionals and amateurs alike.

Winter-time conditions have been particularly fascinating this year, compared to 1985, although I have moved QTH, which probably has made the difference. The 41 and 49 metre broadcast allocations have been especially interesting around our local untime; ie 0200 UTC. Many European signals are being easily heard and logged. Yet the surprising signal has come from an unexpected area in Bolivia, in central South America. Radio Panamericana is a low powered station on 8.105 MHz, from La Paz. It has been observed at 0250 UTC with typical Latin music and there was full identification frequently given on the hour, during a news bulletin. The station is on a split channel, but unfortunately no other European signals were co-channel this day. I hastily wish to add that this station was not

present every day, yet it is unusual as Latin Americans do not come in normally until much later. For example, around 0500 UTC, which is about sign-off time. There are some who operate 24-hours, such as Radio Union in Lima, Peru. It is on 8.115 MHz and is well heard when Europeans fade-out at sunset and before Radio Tarpa in Tokyo comes up.

And, while we are on domestic shortwave relays, an era in Australian broadcasting history came to an end on June 12, when VLR and VLH, in Melbourne, closed down for the final time. These stations relayed the ABC domestic programming to the Inland and the Pacific. They have been on-air since at least 1934. These became redundant with the introduction of AUSSAT relays of domestic radio networks to the same service areas.

Also, the Lyndhurst site was being phased out. So a faint voice on 9.680 and 6.150 MHz, in this part of the world, closed down. Only VNG, at Lyndhurst, remains and this is also in doubt.

There has been no word yet about the other ABC shortwave relays of domestic programming from either Perth or Brisbane. I would not be surprised if the Western Australian relays went the same way as VLR/VLH. The Brisbane relay services tropical areas, where long distance MW reception is impossible due to high static levels at times.

Also, my spies reliably inform me that the ABC Metropolitan Network (2BL, 3LO, 4QR, 5AN, and 7ZR) will likely be permanently operational for 24 hours from August 1. This will make it more difficult to obtain any worthwhile MW DX, without resorting to MW loops, is it a question of time before the Regionals follow suit?

Some of you may not be aware that the BBC World Service has been recently relayed through

the RA Shepparton site. The target is Fiji and has been on 15.393 MHz from 2200 to 0030 UTC. This may be only a temporary arrangement. Unfortunately, reception of this service was not good. Neither was it due to the presence of a VOA relay from the Philippines, in Chinese being co-channel. The back radiation effectively masks the signal, although I am only a few hundred kilometres from Shepparton.

I also believe that the Spanish Foreign Radio has recently signed an agreement with Costa Rica, to construct and equip a shortwave station, which will, reportedly, be jointly shared by FEE and a Costa Rican external service. Also, new relay bases for international broadcasters should be shortly on-air. One in Arava, Israel, is to be jointly shared by Kol Israel and the VOA/Radio Free Europe. It is not hard to guess where the target area is. Another BBC relay base should be fully operational next month. This is in Hong Kong and will relay World Service programs to north and east Asia, as well as Asian language services. The two senders should put good back-radiation to the region. Keep an ear on 15.280 MHz, in our daytime and 7.185 MHz in the even ng.

There is a new compere on the RA *Talkback* program, on Sundays. He is Roger Broadbent, ex-Radio Wellington Pacific Network. He replaces Brendan Teiler. *Talkback* is heard at 0310, 0710, 0910, 1230, 1610, or 2040 UTC, on Sundays.

This month, the Remembrance Day Contest is also held. The rules were published last month so I am not going to duplicate the information. Many SWLs and DXers become involved in this annual contest which is held in memory of those amateurs who paid the Supreme sacrifice in World War II. All the very best of luck and good listening!

—Robin VK7RH



Education Notes

Brenda Edmonds VK3KT
FEDERAL EDUCATION OFFICER
PO Box 863, Frankston, VIC 3199

The final WIA submission to DOC about Amateur Operator Certificate of Proficiency examinations published in this magazine and copies also have been circulated to those that had input to the decision making. Once again, thanks to all who assisted.

It is of course not possible to please everyone in a situation such as this. The stand the Institute took was based on the firm belief that the system suggested would be the most efficient and effective for members and for the future of the hobby as a whole.

Whether or not the Institute is granted sole accreditation, there are a number of steps which must be taken as soon as possible.

We see the completion of the Study Guide at both levels, and the preparation of a Question Bank for producing sample examination papers as tasks that will be of great benefit both to students and to those who are assisting them.

In addition, liaison with DOC with regard to these items should further stabilise the standards of examinations in the approach to the development.

The NAOC Study Guide requires only some minor negotiation with DOC before it can be published. It has been in use in a few classes this year for trialling. But the AOC/PAOC Guide is a long way from completion. It is my intention, however, to prepare a first draft from the syllabus myself and then circulate this for comment to those who have expressed interest in it.

I already have names of some members who are prepared to be part of the Education Committee decreed by the Convention. I would be very pleased to hear from any others who are willing to write, criticise or amend questions, or to criticise or amend sections of the Study Guide. I am sure

there are many members with experience in the technical or educational fields or in helping newcomers into the hobby. All I am asking is some time to read and make comments on material posted to you, and sufficient enthusiasm to return the comments to me by mail. I do not see any need for meeting in person.

If you are interested please drop me a note to the above address.

Recent discussions have raised the possibility of changes to licensing procedures and privileges for various grades of licence. A number of proposals have been aired, all with the common aims of increasing recruitment into the hobby or maximising use of permitted bands. It was pointed out by a DOC representative at the Convention that amateurs accept as a right their access to a considerable amount of spectrum for which commercial users would be prepared to pay thousands of dollars in licence fees.

How do we justify our continued occupation of our allotted bands? It is, perhaps, time for a bout of introspection to decide where the hobby should be going over the next few decades.

Whatever happens with the development proposals, most amateurs accept and uphold the idea of entry by examination, although there are perennial complaints about standards of the examinations.

Most also accept that the examination content should be related to the privileges of each class of licence, if privileges are extended, the syllabus must be extended to take this into account.

IMPLICATIONS

If Novice licensees are to be permitted to operate on the two-metre band, they should be examined on FM, repeaters, VHF propagation and antennas, etc.

But what do we have to add to the AOC syllabus to cover the vast proliferation of modes such as packet, digital and computer generated transmissions?

Should holders of existing licences be examined on new modes or techniques, before being allowed to use them on air?

Hands up all those Old Timers who are operating Solid State equipment, who are not examined on transistors or FETs let alone ICs or logic gates.

The DOC will maintain surveillance over examinations for a long time yet, and changes to procedures or privileges will only come about by negotiation between the Institute and DOC. But there is room for discussion and consideration of the new ideas which are appearing from time to time. It is to be hoped that the debate will consider long term effects, and the overall good of present and future amateurs.

The Institute has established a Committee to consider "The Future of Amateur Radio," intending it to discuss the range of possible options and the implications thereof on both a national and international scale. The committee could predict future scientific breakthroughs, or changes in international relations, but will be expected to investigate some of the recent proposals for change, and recommend directions along which developments should proceed. The committee has a very broad brief, but I could well play a very important part in shaping Institute policy and action.

My best wishes to those sitting for the August examinations. Remember, **READ THE QUESTION, AND ALL the answers.**

73, Brenda VK3KT

AMSAT Australia

Colin Hurst VK5HI

8 Arndell Road, Salisbury Park, SA. 5109

NATIONAL CO-ORDINATOR

Graham Ratcliff VK5AGR

INFORMATION NETWORKS

AMSAT AUSTRALIA

Control VK5AGR

Amateur Check-in 0945 UTC Sunday

Bulletin Commences: 1000 UTC

Primary Frequency: 3.685 MHz

Secondary Frequency: 7.054 MHz

AMST SOUTH WEST PACIFIC

2200 UTC Saturday

14.282 MHz

Participating stations and listeners are able to obtain basic orbital data, including Keplerian Elements from the AMSAT Australia Net. This information is also included in some WA Divisional Broadcasts.

ACKNOWLEDGMENTS

Contributions this month are from UoSAT Bulletin Board, VK5AGR SBS and Bob VK3ZBB.

OSCAR-10 TRANSPONDER SCHEDULE CHANGE (June 1, 1987)

Until further notice — OSCAR-10 will be available for communication at the following times (Mean Anomaly in MA/250)

May/June MA30 MA220
June 8 to July 20 MA20 . MA250
July/August MA40 . MA220

In the period of June 8 to July 20, the transponder of OSCAR-10 could be used between MA20 and MA250. Beyond these MA-times the satellite is in an eclipse and use of the transponder is absolutely forbidden. Users are strongly requested to use minimum necessary Uplink Power, especially when the satellite is around perigee. Best sun angle (100 percent illumination) is to be expected around June 29.

After previous observations of the beacon and transponder signals, we conclude that now the OMNI-Antennas are switched ON instead of the

HIGH GAIN Antennas, which were present for a long time before. The schedule expansion above will allow users to communicate via OSCAR-10 under the presence of extremely good signals. Due to the OMNI-Antenna, the signals around apogee and best MA-Squint are currently somewhat low.

The switch-over was caused by one of the computer crashes, which sometimes occurred when entering/leaving the eclipse with total loss of power due to a BCR/battery problem. The last seems to be fixed recently.

Good DX and 73 de Peter DR205, OSCAR-10 Command Station and Co-ordinator.

UOSAT-OSCAR-11 BULLETIN-090 (June 11, 1987)

UOSAT MISSION CONTROL CENTRE

University of Surrey, Guildford, Surrey, England

UOSAT OPERATIONS

(de G3YJQ)

UOSAT-1 was returned to normal operations on 060887 following an operator error that occurred in April. The resolution of the problem required six weeks of concerted effort using the UHF uplink. A new version of the 'Diary' for UO-8 has been written by Steve Holder at UoS, which should both avoid this problem in the future and considerably enhance spacecraft operations. Whilst the new 'Diary' was being checked out, CCD image data was transmitted continuously on 090087 and 100087, interspersed with 'standard' telemetry. UO-9 should resume normal scheduled operations by 120087 under the control of Chris Payne G1VRL.

UO-8 HF BEACONS

Following reports since Christmas that the 21 MHz beacon on UO-8 was no longer being heard by

stations, diagnostics on the experiment were carried out this week. These showed the beacon to be operating normally. Subsequently, the beacon was tracked (transmitting CW telemetry at 10 and 20 WPM interspersed with a steady carrier) on several passes on 090887 by G4VRC, at UoSAT Reports on reception of this beacon would be most welcome.

UOSAT-2

CCD — several new images have been collected from the UO-121 CCD Imager and are under analysis by Jacky Radbone at UoS.

RADIATION — surveys are planned for July to explore transatlantic propagation anomalies at 50 MHz.

FO-12 TELEMETRY NEEDED

The JARL needs FO-12 PSK telemetry data of the satellite when it is in eclipse. If you obtain telemetry frames where channel No 1 indicates 000, please relay the data to any official AMSAT Net station for relay to JARL (de ANS).

AMSAT TECHNICAL JOURNAL AVAILABLE

AMSAT Technical Journal Editor, Bob Dierling N5AHD, has completed work on the 1st edition of the AMSAT Technical Journal. The Journal contains a collection of first-rate technical papers from AMSAT experimenters world-wide. It should provide the advanced satellite user with new data and ideas, as well as giving the "normal" user a look at the state-of-the-art engineering which makes the Amateur Satellite Program important and possible (de ANS).

Journals must be ordered directly from AMSAT-NA Headquarters, addressed to AMSAT-NA, PO Box 27, Washington, DC 20044, USA.

RS NEWS

Russian sources say the launch will not occur in June and that additional modifications of the RS-9

SATELLITE ACTIVITY FOR THE MONTH OF APRIL 1987

1. LAUNCHES

The following launching announcements have been received:

INTL. NO. — 1987	SATELLITE	DATE	NATION	PERIOD min	APR min	PRG min	SIGL deg
036A	Intert 1	Mar 31	USSR	86.2	329	177	91.8
037A	Cosmos 1634	Apr 09	USSR	92.8	443	413	85.8
038A	Cosmos 1635	Apr 09	USSR	93.7	367	188	85.8
039A	Cosmos 1636	Apr 10	USSR	86.2	313	188	85.8
034A	Progress 25	Apr 21	USSR	96.7	295	190	91.8
035A	Cosmos 1637	Apr 22	USSR	96.7	255	190	82.8

2. RETURNS

During the period 30 objects decayed including the following satellites:

1982-007A	Cosmos 1235	Mar 26
1987-022A	Progress 26	Apr 08
1987-028A	Cosmos 1626	Mar 25

3. NOTES

1987-028A — Raduga 20

Orbital parameters are period 14366.6 min, apogee 35827 km, perigee 35786 km, inclination 1.2 degrees.

1987-029A Palapa B-2P

Orbital parameters are period 1449.1 min, apogee 36852 km, perigee 35129 km, inclination 0.1 degree.

1987-030A Kavnet 1

The astrophysical module spacecraft (quantum) successfully docked with the orbiting manned space complex MIR on April 12, 1987. Experiments in the field of extra-atmospheric astronomy will be carried out on board by means of the orbiting observatory "Remington" and the ultra-violet telescope "Glazur" and also to obtain batches of superpure biologically active substances in weightlessness. Research will be conducted on X-Ray radiation sources over a wide range wavelength, stars of various spectral classes, and galaxies in the ultra-violet part of the spectrum.

1983-041A GOES 7:

1987-022A GOES 6:

GOES 8 and GOES 7 will be known as GOES West and GOES East respectively once they have been maneuvered into their permanent positions. GOES East orbited at 75 degrees west and reached its permanent station on March 24, 1987. GOES West will orbit at 135 degrees west and will arrive on station on or about April 28, 1987.

—Contributed by Bob Arnold VK3ZBB

OSCAR-10 APOGEE — AUGUST 1987

by SATELLITE	BEAM HEADINGS											
	APOGEE CO-ORDINATES				SYDNEY				ADELPHI			
DATE	DAY	ORBIT NO.	UTC	UTG	LAT DEG	LONG DEG	DEG	EL DEG	EL DEG	EL DEG	EL DEG	EL DEG
1987	AMR	NO.	HHMMSS									
1	213	3407	0103.14	20	270	303	2	512	10	330	24	
2	214	3409	0022.08	20	281	309	8	319	15	340	28	
3	214	3411	2241.01	20	232	315	14	328	20	351	30	
4	215	3413	2259.54	20	242	324	18	337	24	2	30	
5	216	3415	2218.46	20	233	334	23	347	28	13	29	
6	217	3417	2137.40	20	223	334	26	358	27	24	28	
7	218	3418	2058.33	20	214	338	30	314	30	35	23	
8	219	3421	2015.20	21	204	3	28	19	24	41	17	
9	220	3423	1934.18	21	195	16	26	28	21	49	11	
10	221	3425	1853.12	21	186	25	27	21	17	36	4	
11	222	3427	1812.06	21	176	35	19	46	11	61	-2	
12	223	3429	1738.58	21	167	43	14	52	9			
13	224	3431	1649.50	21	157	50	8	36	-1			
14	225	3433	1558.44	21	148	58	1					
15	226											
16	227	3435	0225.57	21	304					304	3	
17	229	3440	0144.50	21	295					311	9	
18	230	3442	0103.43	21	286					302	1	118
19	231	3444	0022.35	21	276					293	5	326
20	231	3446	2341.29	21	267	306	3	316	11	335	24	
20	232	3448	2300.22	22	257	313	9	323	18	345	27	
21	233	3450	2219.15	22	248	320	15	332	20	356	29	
22	234	3452	2138.07	22	238	329	18	342	23	1	7	28
23	235	3454	2057.01	22	229	338	21	352	25	17	28	
24	236	3456	2015.54	22	219	348	25	7	26	27	23	
25	237	3458	1934.47	22	210	358	28	13	358	16	19	
26	238	3498	1853.39	22	201	9	26	22	22	44	13	
27	239	3462	1812.33	22	191	19	24	21	18	30	5	
28	240	3464	1731.28	22	182	29	23	16	20	41	58	1
29	241	3466	1650.19	22	172	37	16	47				
30	242	3468	1609.12	22	163	45	10	53	2			
31	243	3470	1528.05	22	153	51	4					

systems are under way. These could affect the modes of operation as well as the frequencies.

RS5 and RS7 will be available for use on the 10th orbit of each day, except Wednesday, through to June 30, says PADDO. Then, from July 1 to July 25, both will be available for use on the ninth orbit of each day, except Wednesday. Both satellites are in poor condition with their batteries virtually useless after six and a half years on orbit.

GSOR reports that the Mir Amalfur Radio Experiment is not imminent. Reports to the contrary have been unduly optimistic. The most recent achievement has been the completion of the transceiver to be used. This may have sparked recent speculation that MAREX activity was at hand.



Australian Ladies Amateur Radio Association

ALARA-MEET

For those wishing to attend the ALARA Get-Together in Adelaide and have not registered yet — time is running out!

Do not delay any longer: get your registration to Maria VK3BMT

SURPRISE FOR MARILYN

As everyone is probably aware, our President, Marilyn VK3DMS, is a very hardworking lady, so when her 50th birthday arrived, OM Geoff sent her off to Melbourne for a week to enjoy a well deserved holiday.

Marilyn had a great time shopping, touring stamp shops (privately is one of Marilyn's hobbies), and visiting friends, including Mavis VK3KS and Bron VK3DYF. More was to come.

On the Friday, Marilyn arrived, with her brother, at her sister-in-law's house, and was very surprised and delighted to find about 20 people (including OM Geoff), who had been sitting patiently in the dark awaiting her arrival. Her surprise party was enjoyed by one and all, especially Marilyn.

Marilyn's interest in radio began in 1971, when she became Official Communications Officer for the Cockatoo Bushfire Brigade. In 1974, she moved to Pooncarrie, where Marilyn and Geoff ran the local Post Office and Telephone Exchange. In 1975, when bushfires caused havoc in the area, they became involved with SES radio, teaching and establishing a network in the field. They ran the SES radio as a base station until they left in 1978.

Geoff achieved his amateur licence in 1977, and Marilyn began to join the ALARA nets with Geoff at her side.

When they moved to Mildura, she found herself quite lost without radio and determined to do

something about it. She joined the 1979 class, and gained her novice licence in May 1980, followed by the first in September, and a full licence in December of that year. Certainly a busy year for Marilyn.

Since then she has made more good friends than she ever had before, and enjoys amateur radio very much.

Last year, she became President of ALARA, a position she fills with flair and aplomb.

We wish you many more years enjoyment of amateur radio Marilyn.

YL ACTIVITY DAY

YL Activity Day was formulated by Diana G4EZI, some years ago as a "Let's get together on air" idea.

Recently, due mainly to poor propagation, fewer YLs have been heard, but with the beginning of the next solar cycle we may soon be able to catch up with some of our DX friends, renew old acquaintances and make new ones. YL Activity Day is a good place to begin.

YL Activity Day — sixth of each month

Listen on the hour UTC (ie after 2400 UTC during our winter, for 24 hours).

Phone: 3 588, 14 288, 21 188, 21 388, 28 588, and 28 688 MHz
CW: 3 530, 14 058, 21 058, 21 133, 28 088, and 28 133 MHz

KEN MCLACHLAN VK3JAH

After several years as DX Editor for Amateur Radio, Ken VK3JAH, has decided to call it a day, (see July AR).

If you are wondering what you are doing in the ALARA Column, Ken, you are here because we would like to wish you well for the future, and thank you for your support of, and assistance to, ALARA on so many occasions.

Fl.Ddiag.E

Formed in 1981 in recognition of the special knowledge and skills required by persons involved in fault diagnosis, plant management maintenance and problem solving.

At the present, admission is based solely on competence and capability without regard to age or academic attainments.

To obtain further particulars send fully stamped and addressed envelope to:

Malcolm Tulloch
INSTITUTION OF DIAGNOSTIC ENGINEERS
P.O. Box 419, Ringwood, Vic. 3134.
Australia 161. 24 Sammit Crescent, North Ringwood

Joy Collis VK2EBX
PUBLICITY OFFICER, ALARA
Box 22, Yeoval, NSW. 2868

NEW MEMBERS

A warm welcome to Rose SM5HYL and Jeanette VK4BZL, ex-P292L. Great to "have you aboard."

REGARDING RADIO SHACKS

And, of course, every ALARA member has one, whether it be a spacious room filled with all the latest gadgetry or a modest transceiver on the end of the kitchen bench.

Sometimes the shack is shared with the OM or other family members, sometimes not. This is my radio shack.

I have a little radio shack beside the attic stair, There's a curtain on the window, there's a comfortable chair.

Certificates and QSLs adorn the white brick wall, And I am running out of space in which to put them all.

My HF rig is on the bench, with log books strewn around, And a box of bits and pieces 'neath the cupboard on the ground.

Odds and ends that may be useful in some future great home-brew, When I have the time to sort the things I've always wanted to.

There are coils and resistors (some are old and rather bent), And a Morse code oscillator (We'll wonder where that went).

There are diodes and condensers and an ancient valve or two, Insulation tape and solder, and half a tube of glue.

Shelves bulge with books and magazines catalogued by the score, A large world map is hanging on the wall beside the door.

Pens and pencils in a box (the writing I don't shrink), But the pen I grab is always the pen that simply will not work.

My little Morse key is ready to transmit each dot and dash, There are meters, filters, tin-foil and some thumb tacks in a jar.

I've a floppy cushion at my back, a cat upon my knee, Yes, this tiny room is really such a pleasant place to be.

And in my little radio shack the world is close at hand, So many different accents as I tune around each band.

But... shock and horror! The OM's voice drifts through the open door, "I think we'll clean this room right out and use it for a store!"

"Bye now, 73/33, Joy VK2EBX"

Club Corner

PORT AUGUSTA AMATEUR RADIO CLUB AWARD

The Port Augusta Amateur Radio Club is launching a new award to celebrate the first birthday.

On the weekend of August 8 and 9, the club will be celebrating its first birthday. Amateur who contact the club station, VK5AUG, from 0930 UTC on the 7th to 0730 on the 8th, will be eligible to obtain the award. On application for the award, which only requires a log extract and \$5, the award will be posted. As a birthday present for this occasion, the recipient will be eligible to win a power supply transformer rated at 18 volts, 10 amps continuous or 18 amps peak. The winner will be announced at the monthly meeting on September 11.

Shortwave listeners can also qualify for the award by logging the club station.

Those who qualify for the award during the birthday weekend will receive a multi-coloured certificate.

The award will still be available after the birthday weekend but it will be necessary to work the club station plus four member stations. Shortwave listeners will qualify by logging the club station and four member stations. Application details will remain the same, however the award will only be monochrome.

For applications for the award or further information contact the Awards Manager, CW McEachern VK5KDK, PO Box 360, Port Augusta, SA 5700.

—Contributed by CW McEachern VK5KDK, Awards Manager, PAAARC

VICTORIAN WIA WESTERN ZONE

A meeting of the above Zone will be held on Saturday, August 22, 1987, at the Lake Solac Hotel, from 7.30 pm.

The following notice of motion has been received and will be discussed at this meeting. 'Unless funds are received prior to the August meeting to allow the Zone to operate satisfactorily, all activities of the Victorian Western Zone will be suspended.'

—Contributed by Jim Wright VK3CFB, Secretary, WIAWZ

VK4 DISABLED PERSONS RADIO CLUB

To celebrate the fourth anniversary of the opening of the VK4 Disabled Persons Radio Club, an activities day will be held at the residence of Roley Norgaard VK4AOR, on Sunday August 30.

The club station, VK4BTB, will be on the air from 0001 to 0600 UTC (10 pm to 4 pm local time). This period is likely to be extended according to the availability of willing operators.

Intended frequencies for use on the day are 3.590, 7.090, 14.190, 21.190 MHz as dictated by time and conditions.

The station will be off-air from about 4000 to 4300 UTC as the formal part of the day will take place at this time.

Paul Bell VK2VJR, has offered to help promote the day by making a donation in the form of a prize. All people participating, including those making radio contact, will be eligible to win this prize and it is anticipated to announce the winner on 3.590 MHz at about 0600 UTC.

Further inquiries can be made by contacting the club on their regular Friday Net, which commences at 0900 UTC, on 3.590 MHz, or by contacting Roley VK4AOR, on (076) 96 7587 or Graeme VK4NYE, (076) 30 8323. Both are QTHR.

All members of the club look forward to making your acquaintance on the day.

—Contributed by Roley Norgaard VK4AOR, Station Manager for VK4BTB

WAGGA CONVENTION 1986

How better could one spend a spring weekend out amongst the birds and bees in the country, than by attending the 1986 Wagga Convention, last October.

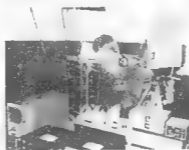
A large "roll-up", similar to past years, began gathering in Wagga on the Friday night with an almost certain guarantee of perfect Riverina weather. Fortunately for all, the guarantee came good and almost perfect weather prevailed for the whole weekend. So much so in fact, that this year's organisers of the annual event are almost

ready to come up with the same guarantee for Wagga 1987, in October.

Back to 1986 visitors were treated to a wide range of displays and general activities that kept everyone involved over the weekend. Apart from the usual field event contests, etc, there was a



Stan VK3BSR, from Bail Electronic Services, shows Kevin VK2ZKV, the latest in Morse keys.



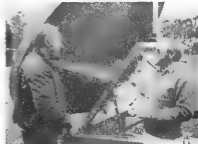
Peter VK2DOL, with his ATV display.



From left, Peter VK2KZZ congratulates joint winners of the 70 cm Yagi (donated by ZZY Antenna Farm), Graham VK2HJ and Peter VK2DOL.



Sid VK2SW (left) and Tony VK2ACV, check the old components table.



Doug VK2ZMP enjoys a chat with Phil VK1YS.



Russ VK2AZR, with a proper "wireless set."



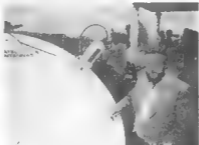
Dave VK2ZYE, loading his dishes after the convention.



Enjoying a chat, from left, John VK2AQ, Russ VK2AZR, Harry VK2AEC and Rex VK2YA



Jeff VK2KCL, receives his prize of a satellite dish (donated by Satellite Antennas Pty Ltd), from Roger VK2ZTB.



Wagga Club President, Peter VK2KZZ, and Roger VK2ZTB, inspect the working satellite television display.



Jeff Pages VK2BYY, receives his prize, a laboratory power supply (donated by Scientific Devices), from Roger Harrison VK2ZTB

good variety of trade displays coupled with many working demonstrations of very interesting amateur and commercial activities. Among the working displays were such items as 70 cm ATV complete with a special "outside Broadcast" of one of the field contests. There was also displays of actual, working slow-scan television Intelsat showing American television, and AUSSAT was well represented with actual off-air pictures.

A Wagga Convention would not be the same without a vintage radio display giving visitors the opportunity to travel back in time to the days of valves, large resistors, mammoth inductors, heavy relays and plenty of brass things — no plastic or multi-legged fuses — always a popular exhibit.

The Saturday Night Official Dinner also proved a great event at the local Australian Rules Club. A capacity house enjoyed a variety of entertainment including an address by the convention guest, Roger Harrison VK2ZTB.

In all, a very good weekend for amateurs and their families who had, collectively, travelled thousands of kilometres from SA, Vic, Qld and NSW. This years event is also shaping up to be one not to be missed. Club members hope to see all the old friends and new ones in Wagga this October.

—Contributed by Jeff Lange VK2ZJJ

AUSTRALIAN GOVERNMENT
Department of Science



IPS GRAFEX PREDICTIONS TAKE THE GUESSWORK OUT OF HF RADIO FREQUENCY SELECTION

Grab a GRAFEX and, during any particular month, GRAFEX will recommend the best:

- Times
- Frequency Bands
- Average radio wave elevation angles for radio wave propagation between any two places.

From \$16 a year GRAFEX will improve your transmission and reception.

For further information and to order your GRAFEX predictions, please contact:

**GRAFEX PREDICTIONS
IPS RADIO AND SPACE SERVICES
P.O. BOX 702
DARLINGHURST NSW 2010**

IPS Radio and Space Services
162-166 Goulburn St. Sydney 2010
Telephone: (02) 269 8617

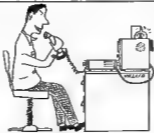
Name:

Address:

Postcode:



"I've got the rig upside-down — I think all the DX has sunk to the bottom!!!"
—VK2COP



"I'm putting 1 kW into a — whoops — I mean I'm running 400 watts into a three-element Yagi!"
—VK2COP

TAKING TWO METRES BY STORM

Icom (Australia) Pty Ltd has announced the arrival in Australia of a transceiver destined to take the two metre band by storm. With the imminent granting of two metre FM privileges to Australian Novice operators, with a subsequent major increase in activity on that band, specifications for two metre transceivers will become even more critical than at present. The IC-275A two metre transceiver is well positioned to become the 'bench-mark' for two metre base/mobiles under these new more crowded conditions.

Until now, the only truly 'top-spec' two metre all-mode transceiver available in Australia was the IC-271A. For all its superb specifications and features, it has one minor drawback. It cannot be used away from the 240 volt mains supply. In the IC-275A, Icom has overcome that 'shortfall' providing comparable features and specifications in a transceiver that is as flexible as the active amateur who uses it — the unit runs on 13.8 volts DC and can be fitted with an internal 100 percent duty cycle power supply (IC00S25) for mains operation.

In some ways, the IC-275A is superior to its highly-rated predecessor. The inclusion of Icom's latest recent engineering development, the Direct Digital Synthesiser (DDS), makes the IC-275A unique. DDS is the logical successor to the (aging) Phase Locked Loop (PLL) frequency synthesis system and completely replaces all PLL circuitry with an advanced computer-designed, digital synthesis circuit that provides extremely fast (five ms) lock-on to selected frequency, fast PTT switching for packet radio and AMTOR modes, and superb frequency stability through the mixing of DDS-generated source frequencies in an advanced double phase-locked loop system.

And that's not all that's new — the HD84B180 ROP central processor unit (CPU) in the IC-275A provides 99 user-programmable memory channels for memory frequency, mode, duplex direction and offset, and where used subaudible tone information. The CPU also provides advanced remote control functions via a rear-mounted RS-232C jack operating at 1200 baud, a low ng computer control of VFO frequency and mode selection, and memory data via an approved ALE interface. Four separate scanning functions provide easy automatic monitoring of selected band segments or the entire two metre band. Memory Scan automatically cycles through each of the 99 memories with stop on busy or stop on clear. Mode-Selectivity memory scan allows selective scanning of only those memories containing the same mode as the VFO in use. Programmed Scan repeatedly scans a user-programmed segment of the band. Skip Scan allows automatic scanning of only selected memory channels, regardless of mode.

The newly designed liquid crystal display (LCD) uses a soft orange illumination for maximum display visibility, even in a bright environment. The display unit provides convenient monitoring of the VFO in use, selected mode, split or offset, scan data, memory channel, RIT offset, subaudible tone data and operating frequency.

User enhancements include IF passband tuning (PBT), deep notch filtering, noise clamping, selectable AGC and speech compression. Optional add-on modules include the AG-255 mesh-mounted preamplifier (with front-panel control), UT-36 voice synthesiser for mobile or slight-impaired use, UT-34 tone squelch unit for 'quiet base' type operation, CT-16 satellite interface for common control of the IC-275A/H and its 70 cm companion, the IC-475A/H, IC-15 AQS adaptor for full access to the 'Amateur Quinimatic System', FL-



83 CW narrow filter providing 500 Hz selectivity at -40 dB, and the CR-64 high-stability crystal unit providing stability of 0.5 ppm within the operating temperature range of the transceiver (normal stability is 5 ppm).

For advanced mode applications, the IC-275A is provided with an easily accessible rear-panel AFSK jack for RTTY, Packet or AMTOR use and a Data switch to reduce transmit/receive switching time to an incredible 0.005 seconds.

The IC-275A/H is on display now at authorised Icom dealers. For more information and specifications, contact your local dealer or Icom (Australia) Pty Ltd, 7 Duke Street, Windsor, VIC 3121.

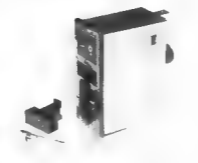
TEST RIG FOR CELLULAR MOBILE TELEPHONE INSTALLERS

If it was necessary to test an installation of one of the newer Cellular Mobile Telephones, you may have had trouble — until now! Call Me Communications of Parramatta are selling a completely Australian built and designed SWR/Power meter that accurately measures power and SWR in the 800-900 MHz region where these exotic radios transmit.



Designated model 03-801, the meter is designed for installers who need a rugged instrument to check antennas and cabling. A very detailed instruction manual is included, which takes the operator step by step through the various procedures and checks, and even diagnoses likely reasons for various difficulties.

For further information and specifications of the 03-801 SWR meter contact Call Me Communications, 28 Parkes Street, Parramatta, NSW 2150. Phone (02) 633 3545.



EMI FILTERS

Most EMI filters fitted to electronic equipment are normally an integral part of the socket, the power switch being located elsewhere.

A new product, recently introduced by J.A. Severn is a composite power line socket module that includes both filter and switch. The socket is a standard three-pin IEC connector suitable for 250 volts AC and the switch is capable of switching six amps. Common mode insertion loss at 10 MHz is claimed to be greater than 40 dB and, in normal mode (line-to-line) greater than 60 dB. The module is designed for panel mounting and standard connection is by 6.3 mm Quick-Connect terminals.

Details of the EMI 7103 series power line socket module is available from J.A. Severn Pty Ltd, PO Box 129, St Leonards, NSW 2085. Ph: (02) 957 6455.

HALCYON DAYS

Do not miss the latest work by Alan Shawsmith VK4SS, the WIA Old D vision Historian. This book is a condensed story of VK4 history up to WWII and runs into 178 pages and approximately 45 000 words. It contains over 100 photographs, illustrations and early documents. There are 200 thumbnail biographies of pioneers and experimenters, revealing all kinds of facts about which we are mostly forgetful.

Read about the near tale of the WIA in 1929 — will history repeat itself in a few years? What was the ORTL and who were the men who took over the displaced WIAQ and became its pre-presidents? When was the first Australian VHF record achieved in VK4? Who were the HF DXers who broke QRP world records and what was the state of the ionosphere during this period? Also, what were the developments that began to turn the world into a global village? Why did the many flourishing private clubs suffer an almost total demise by WWI? Why was the Observatory Tower the most significant amateur shack in Queensland, possibly Australia? Did you know there were over 250 radio magazines and journals available in Australia pre-WWII? Could you pass a 1930s AOCPE examination and what do you know of the modusoperandi of the period? ... All these and 1000 more facts can be read in Halcyon Days.

Only one print run is possible and a sell out anticipated — so don't miss it! Advance mail orders, personally autographed by A. VK4SS, can be obtained at a specially reduced price.

Halcyon Days is a full-sized quality product professionally presented, designed to suit the amateur's pocket and the first of its kind in Australia. It is no heavy, dull tome but a written in an easy-to-read, light style an sprinkled with humorous anecdotes — guaranteed to raise a laugh and inform at the same time. A book not to be missed and a perfect gift for a radio friend.

It is expected to be available straight from the presses, by September.

Order now from the W.A. Old D vision Bookshop, GPO Box 638, Brisbane, Q 4 001, or contact Anne VK4KZX on (07) 348 7768.

Pre-production price on 07 August 21 1987 \$9.25.

Post-production price after August 31 1987 \$12.00.

VK3 WIA Notes



NEW MEMBERS

The following applicants are welcomed to membership of the WIA, VK3 D vision: Ronald Adams, Ian Bevan, Gary Carlson VK3KB, A G K-neo VK3PKU, Dominic McLaughlin, Andrew Monkhouse VK3YAU.

VK2 Mini-Bulletin

Tim Mills VK2ZTM
VK2 MINI BULLETIN EDITOR
Box 1066, Parramatta, NSW 2150

THE RD CONTEST — 1987

Have you marked your calendar for the weekend of August 15/16? The rules were in last month's AR. If you are able to spend a couple of hours, or the full weekend, in the contest it will help VK2.

A reminder — the broadcast for this weekend changes. Instead of the usual morning session, it is replaced by a transmission at 5.30 pm on Saturday, August 15, which concludes with the opening address for the RD at 6 pm. The usual Sunday evening session is at 7.30 pm. After taking part, do not forget to send in your log. Have a good weekend, conditions permitting.

NOVICE DEBATE

As these notes were being prepared the discussion was still occurring on the possible extension of Novice privileges to include aspects of the two-metre band. The thanks of Divisional Council to the various clubs and members who have written with their respective thoughts. Because of the time delay in these notes, you are requested to keep in touch via the broadcasts or should you not hear these, then via the telephone news report on (02) 851 1489. The outcome of the discussions should have been conveyed to you by now, via the broadcasts or elsewhere within Amateur Radio.

While there has been a considerable response to this subject, and many amateurs have taken the trouble to indicate their point of view, which is most helpful in decision-making, it is disappointing that prior to the Federal Convention, only seven people attended a forum at Amateur Radio House to discuss the agenda items. This topic is just one of many which requires input and ideas from every amateur at regular intervals.

WICEN

The WICEN Net conducted on the Sydney Repeater VK2RWS, was scheduled to change the starting time to 9 pm early in July.

Coming events for WICEN include the Sun City to Surf on Sunday morning, August 9. The event is being co-ordinated by Brian VK2ZB, and is open to any amateur to assist. It is an exercise to enable non-WICEN persons have a look at what goes on. The next major event close to Sydney is the Hawkesbury canoes over the weekend of October 10/11. Most local WICEN groups have exercises within the region.

MAY AMATEUR RADIO

A problem occurred somewhere within the mailing distribution system which resulted in a large number of the May issue taking from 10 to 20 days to reach their destinations. Many members advised the office of the non-receipt of the magazine. In some cases replacement copies were arranged, only to have the original arrive at the same time. Some members, when advising that

their copy had not arrived, voiced levels of concern about the magazine and its content. This was balanced by others saying how pleased they were with the improving quality of it in recent times. While the magazine has to cover and include a wide range of subjects, similar to a daily newspaper, not every subject will interest every reader.

Technical articles are important to any (technical) publication and should, where ever practical, come from within the membership. While there are many good articles in other magazines, they are not the same as your own. So, if you are working on something and would like to share the experience with others, why not send something along.

The other important function that a membership magazine like *Amateur Radio* provides is the written notification of changes and news to member. Whilst we are perhaps lucky for different in being a communications hobby where some information can be passed by the medium of radio, it is the printed word which is the only lasting record that can be referred back to as required.

Perhaps the halfway point in this is the mode of packet radio. Work is proceeding within the packet groups to link country regions. Recently, the Oxley Region installed their digi-repeater, VK2RPM 7575, which has extended the northern coverage from Newcastle. Work is proceeding to the south with systems being established to connect Sydney into the Riverina, via installations at Mittagong and Goulburn. These will link up with the VK3 systems to provide a circuit to Melbourne.

The Division is working towards having a packet bulletin board which can be accessed from this network. It will provide an information and reference source, including most items of the Sunday broadcasts, which are prepared on the word processor and read live from Dural. Further details when the system is on-line.

HOME-BREW

Are you currently building a project? Do not forget the annual home-brew contest. Entry forms available from the Divisional Office. You may collect one during the open hours of 11 am to 2 pm, Monday to Friday, or 7 to 9 pm, Wednesday nights. Alternatively, write to the PO address above or telephone (02) 689 2417, during these hours.

LICENCE RENEWALS

A reminder it is almost a year since the NSW DOC placed their records on the SMSIS computer. Make sure that you have your licence renewed by its due date. Even so often we are finding a duplicated call sign in our records so the respective holders and the Department are advised. Between all concerned, the problem is sorted out.

DIARY DATES

Tuesday, August 25 — Ross Forbes WB6GJ, "An Amateur Radio Tourist Guide to San Francisco" (illustrated with 35 mm slides).

(We have been very lucky in obtaining Ross as a speaker as he will only be in Adelaide a few days — our thanks to Graham VK5AGR, for this 'coup' — don't miss out on this rare opportunity to hear Ross).

The next Conference of Clubs will be held in November. Clubs are reminded that agenda items have to be lodged at the office by September 11.

Have you been looking for 910 troides? The need still exists with the HF AM transmitters at Dural. On the subject of Dural, the fireworks evening in late May was an excellent night with an attendance of over 100. Do not forget the monthly BBQ, usually the first Sunday of the month — August 2 and September 6.

DECEASED ESTATE

The Division has been asked to offer the following for sale by tender on behalf of a Deceased Estate. Interested persons should submit their offer, in writing, to be received at the Divisional Office by August 21, 1987.

Item 1. Kenwood TS520 with DGS display unit.
Item 2. Info-Tech M-300C RTTY/ASCII/Morse keyboard unit.
Item 3. Info-Tech M-200F Converter to drive above keyboard (and video display).

NEW MEMBERS — FOR JUNE

A warm welcome is extended to the large intake of new members during June.

R E Barrie Assoc	Eastwood
C W Belton Assoc	Wheeler Heights
P Borrell VK2YBP	Randwick
B Bowler VK2XFS	Richmond
K J Burton Assoc	Wauchope
M R Cheesman VK2XGK	Springwood
A M Elsom VK2FCO	Carlton
V Ficarra Assoc	Coniston
C Gooch VK2XCG	Baulkham Hills
J G Griffith VK2BGG	Wauchope
A N Herring VK2FVK	Manly
V Huzvica VK2AEA	Parramatta
M G Johnstone Assoc	Method
P V Kelly VK2MCD	Quirnbach
C Lawitt	Valley Heights
G W McLennan VK2MBV	Kurri Kurri
G B O'Keefe Assoc	Mudgee
W R Phillips VK2MWP	Kooragang
J S Sharpe Assoc	Forresters Beach
J Siqueira VK2MCF	Harris Park
C A Smith Assoc	Jenolan Caves
E J Smith VK2EBY	Kiama
M W Smith (Mrs) VK2BAK	Kemps
T Yu-Dinh VK2XGZ	Kingsford
N J Walde VK2ZFE	Port Macquarie
M J Wallace VK2ZJW	Wauchope
G P A Worral VK2GPA	Gordon

LOW MORSE OPERATORS

This highly session is provided by a group of operators on VK2BWI. Vince Roberts VK2CVR, is the co-ordinator who is on the look-out for additional operators. If you can assist would you call in after the session on 3 350 MHz.

Jennifer Warrington VK5ANW

59 Albert Street, Clarence Gardens, SA, 5039

Five-Eighth Wave

The questionnaire which you should have received in your July insert into AR will hopefully be collated by the time you are reading this. As soon as we have the results we will put them on the Sunday morning broadcast. However, they probably will not get into this column until the October issue, due to our read times. Rest assured that we will publish them eventually.

At our May meeting, we were pleased to welcome Ron Henderson VK1RH, and Bob Propper VK5PU. Although Bob is a member of this Division, he is normally resident in the USA.

Also at that meeting it was my sad duty to announce the passing of Cam Patterson VK5KR, suddenly at Peterborough. The usual period of service was observed and we extend our sympathies to his wife and nine children.

September 22 — Will be our popular Display of Members' Equipment night at which the usual prizes and vouchers will be awarded, so start thinking now which piece of home-brew equipment, which you have built recently, would interest other members and perhaps win you a prize into the bargain!

JUBILEE 150 AWARDS

1393	YB3EUO
1394	CS3FH
1395	YCOEFC
1396	YD2DGO (as SWL)
1397	YD2HZZ (as SWL)
1398	VK3YH

Over to You!



A POINT TO PONDER

With regard to the recently mooted allocation of band space on two metres for Novice operators, I would like to put forward this point to the discussion. If a decision is made to grant such privileges, after suitable resolution of any problems which may arise, perhaps the 70 cm band would prove to be in much more need of the increase in activity which would result from an influx of new operators. This seems to be borne out by the call for increased use of the UHF spectrum allocation much coveted by the ever expanding commercial segment, as was indicated by DCC at the Federal Convention. Let us hear more on this one!

**Alistair G Elrick VK4FTL,
c/- Base Radio Station,
RAAF
Amberley, Qld. 4305.**

FURTHER TO...

I refer to my letter concerning the "Amateur Radio Discussion Paper" and the reply by Andrew Keir VK2AAK, printed on page 59, of March AR.

I have delayed penning a reply in order, calmly and coolly to appraise Andrew's letter. The only opinion I can offer is that he went for his gun so quickly he has shot himself in the foot.

In my letter I went to great pains not to single out any individual as I am of the opinion that too much space is taken up in AR with unproductive personal criticism. In spite of this, Andrew saw fit to use my correspondence as a catalyst to launch a vituperative attack on my character, reminiscent of a rabid ferret!

I wish to make it known that I have never met or corresponded with Andrew in any way and, unless he is privy to information of which I am unaware, Andrew is manifestly unqualified to comment on my credibility.

In one paragraph he states that obtaining a full call is no great achievement, but in the next paragraph goes to great pains to inform us that he has recently upgraded. If it is no great achievement, why did he bother? (How's your foot, Andrew?)

Andrew states that his circle of friends has forgotten more about radio than I will ever know. Whilst I admit my knowledge is limited I hope what Andrew states is correct as this country is sorely in need of a new breed of technique wizard. Perhaps when Andrew's full potential is realised we can expect advances unprecedented since the days of Tesla and Edison. Look out Silicon Valley, here comes Devon Hill!

Yours sincerely,

**R Cummin VK2CRJ,
38 Hague Street,
Rutherford, NSW. 2320.**

TRAILING ANTENNA

I am amazed at the article published on page 26, AR, June 1987, re VISUSA Aeronautical Mobile. Hopefully the Department of Aviation did not read the page.

Jeffrey Thornton's father should think before he lowers half a house brick out of any aircraft. This is completely unacceptable by DOA. Has he ever thought what would happen under negative "G" conditions? ruptured fuel tanks, damaged flight and control surfaces, etc. The only trailing antennas used on an aircraft must be approved by DOA and exit the rear of the aircraft by the use of a drag device.

Yours faithfully,

**Geoff Campbell,
279A Victoria Place,
Brunswick, NSW. 2047.**

PLI COMMENT

The article on Power Line Interference in the June issue of AR was excellent and informative. We still however have the situation where amateurs, legal

users of the electromagnetic spectrum, suffer gross interference from outdated power distribution systems.

In many cases, where amateurs suffer S9 plus (wpe-out) PLI, the television signals are so strong that no PLI shows on any channel except Channel 2. Too bad if you do not have a low frequency television channel in your area, or the Channel 2 signal is very strong. What happens when all the television stations are moved out of the low frequency band, as has happened in the UK?

I put the questions to the Department of Communications:

1. "Would you tell a television viewer in a weak signal area that nothing can be done because the television signal is low level?"
2. "Would you tell a commercial/business radio user that nothing could be done about his PLI problem?"

Amateurs can be closed down for causing interference. In this age of equal opportunity, how about the power generating and distribution authority being made responsible for their interference problems?

Most power line interference problems can be eliminated with good engineering practice. Relying on unbonded mechanical joints and non-linear leakage paths is not good engineering practice when dealing with high voltages.

The same theory applies to power distribution as does to digital circuits — "Never have a floating situation." Like good antenna engineering practice — ensure that all potentials are well separated and all mechanical joints are well bonded.

Power line interference is incidental radiation. Incidental Radiation is radiation which is not required for the correct operation of the equipment or service (see the Radiocommunications Act).

Spark transmissions are banned by the Department of Communications, yet power distribution authorities appear to be exempt!

Yours sincerely,

**AD Tregale VK3QQ,
73 Hoppen Street,
Watsonia, Vic. 3087.**

BANDS, LICENCE GRADES

After much thought on the subject of new allocations for Novice, Limited and Combined Novice/Limited Licensees, I have compiled the following suggestions for consideration by readers. Similar correspondence has been forwarded to the DCC, the WIA and ASA magazine to stimulate discussion and comment. Many amateur radio operators hopefully are now stirring from their apathy due to the many opinions, concerns and, as some feel, threats, generated by the proposals, and the possibility of further input to DCC and the WIA is eminent.

My suggestions are as follows:

- (A) Proposed new allocation — NAACP Novice Licence.
1. 29.525-29.700 MHz — Mode FM (simplex and duplex operation, repeater use permitted).
2. 145.200-145.700 MHz — Mode FM (simplex operation only).
3. 439.000-440.000 MHz — Mode FM (simplex operation only).
Power — 10 watts DC (output from PA) maximum.
- (B) Proposed new allocation — NAACP Limited Licence.
1. 29.525-29.700 MHz — Mode FM (simplex and duplex operation, repeater use permitted).
Power — 10 watts DC (output from PA) maximum.
- (C) Proposed new allocations — L/NAACP Limited Licence plus Five WPM Morse
1. 1.835-1.875 MHz — Modes CW, SSB, RTTY, SSTV and Packet.
2. 7.025-7.300 MHz — Modes CW, SSB, RTTY, SSTV and Packet.

3. 24.925-24.950 MHz — Modes CW, SSB, RTTY, SSTV and Packet.

4. 29.525-29.700 MHz — Mode FM (simplex and duplex operation, repeater use permitted).
Power — 10 watts DC, 30 watts PEP (output from PA) maximum.

- (D) Proposed new allocation — NAACP Full Call Licence.
1. 95-100 kHz — secondary service — Modes CW and SSB.
Power 25 watts DC, 100 watts PEP (output from PA) maximum.

The above allocations are designed to spread amateur activity in an attempt to ease the congestion in some of the bands which are frequented by both Novices, Limited and Full Call alike. They also give these licensees more common ground which I feel will promote more study and create the need for the upgrading of licences to Full Call standard. By gaining a taste of VHF and UHF operation, novices may understand the usefulness of this part of the spectrum and wish to gain full privileges, even if only for the frequencies above 52 MHz and into the bargain gain further access to the HF spectrum.

By the same token, the Limited and the Limited/Novice licensee may gain further incentive to upgrade to Full Call through using the proposed new segments. I would also propose that the Limited licensee who is qualified at sending and receiving Morse at five words-per-minute should not be classed as a Novice on HF in view of his/her higher theory standard. It then follows that they be permitted to use some of the modes already in use above 52 MHz on these proposed segments where they will not clutter the Novice licensee's band space. I would also suggest that a Limited licensee who is qualified at the combined call forming a new class of licensee.

While the segment 95-100 kHz would not be used by all Full Calls, I believe a lot of interest could be generated in this area. I understand that on rare occasions permission has been granted to a few amateurs to conduct experiments in this region. No doubt the challenge of building equipment for the band could make it the last bastion of the home-brewer which, in itself, is enough to interest many amateurs. Of course, the theory examinations would have to reflect the above proposals in content to ensure that problems did not develop during operations in these new areas, but I feel confident that this matter could be handled easily.

Above all, these proposals are designed to provide spectrum access for a larger number of amateurs and hence more efficient amateur band usage. It may be as well to plan these moves now as the commercial needs of spectrum space increase so that amateur radio as we know it, can survive into the next decade.

I will now end this rather long-winded "over" and confidently leave this matter for your consideration.

73, de,

**Peter McAdam VK2EVB,
PO Box 433,
Coffs Harbour, NSW. 2450.**

EXAMINATIONS

I beg to offer some comments on Brenda's Education Notes in the June issue. I was pleased to read that a great deal of suggestion and discussion was presented relating to proposed changes in the amateur exam system. Any improvements in this area of amateur radio must be based on widespread opinion, especially from persons engaged in the training of future operators.

However, I noted that Brenda suggested that we "old hands" who took essay-type questions "had it fairly easy." As one of those ancient types I must take issue on this point. The standard required was adequate for the pre-high-tech approach to amateur radio. Far from swotting 10 past ques-

tions, we improved our chances by preparing — and thoroughly — at least 20 or 25 — complete with full circuit diagrams and detailed explanations. Anyone preparing only 10 to 15 model answers was taking a real risk of missing out. Having conducted AOCOP courses for many years, I might be pardoned for expressing this opinion. Also, wherever possible, instruction in theory — even with essay-type questions — had to be related to actual pieces of equipment — receivers, transmitters, power supplies, etc. Yes, we had no syllabus in those far-off days and this was for decades a weakness in the Departmental testing arrangements. It was only after considerable pressure from the WIA that Novice and AOCOP syllabuses were produced by the authorities. Admittedly, marking had to be conducted by technically competent Departmental officers, but that presented no problem, as the people concerned were technical types in the Examination Branch of the Department, handling not only amateur examinations but Commercial and Broadcast Operator's Certificates. There is nothing new in having exam nations marked by persons who may vary in their assessments. A competent examiner's practice should be to make up model answers for his theory paper and then evaluate each candidate's efforts against the model.

I agree that multi-choice questions are easy to mark, but is that the most important criterion? I point out that it is just as easy to set direct questions such as "What is the length in feet of a halfwave dipole antenna to be used on the 3.5 MHz band?" instead of offering a range of four options. I would be possible to increase the sampling of a candidate's radio knowledge considerably by increasing the number of questions that should be answered in the allotted time. Also, there are candidates who have difficulty with reading and comprehending the various alternatives in the multi-choice format. It is at all a disadvantage in the multi-choice situation. Some people will complain that they find no problems with writing essay-type answers. Their fears can be allayed by pointing out that amateur examinations are not designed to test English Expression, but Radio Knowledge. An essay-type question can be answered by listing points from 10 to 10 (for example) with each point being followed by short notes to exp on the sequence of operations. If the WIA accepts the challenge and takes on the examining function, we should be able to look forward to experimenting with other forms of questioning than just multi-choice. We do not want to find the "dead hand" of OOC on our shoulders to inhibit trail of alternative methods. There are plenty of people in the WIA capable of framing variations and assessing whether new formats are more useful than the clumsy and unwieldy types used at present. There are many other question formats available, but these have been ignored by the existing examiners of OOC on our shoulders.

At least there should be an option for candidates to "take" theory papers based on the existing Question Bank, but State Division examiners and Radio club examiners should be given the chance to "try out" other formats. If the examining task is distributed to Divisions and Radio clubs, the accreditation bodies there will not be the same pressure to have "easy marking" as the principal objective. The notion of a monolithic WIA examination system based on a Melbourne WIA central system is most unacceptable. The State Divisions should be responsible for examining candidates within their own State boundaries. One of the ideas of using the proposed examination system to perform a revenue-raising function is quite contrary to the notions and principles of amateur radio. The stress should be on (i) Voluntary Morse Examiners, (ii) Voluntary Examination Committees at State Level, (iii) Voluntary Examination Supervisors and so on. Surely candidates should be able to find people who have benefited from amateur radio to the extent that they are willing to "put something back" into our grand hobby.

Yours truly,

Ret Black VK2YA,
562 Koorring Road,
Wagga Wagga, NSW, 2650.

LICENSING

I am getting sick and tired of all the so-called discussion about classes of licences and their introduction.

I thought, at first, that the idea of an easy-to-get CW-only licence was appropriate at the time. I envisaged a one to two year, non-renewable simple licence with home-brew equipment, a small portion of 160 or 80 metres, low power (five watts or less), and low licence fees.

After much discussion and consideration I have changed my mind. Now, I feel that one class of licence is enough for all and that it should be AOCOP level or higher. Why such a change of heart?

Consider, novice was supposed to be a non-renewable licence and only an incentive to upgrade to AOCOP. But what happened when the time came to take it away? Although it was before my time, it seems they lobbied and decided to let them have it instead.

That was the first lowering of the standard.

The same could happen if any large group decided they wanted more of our bands. Novices can wait, get together and claim as much of the bands as they like. It is easier than studying for the AOCOP and they have the numbers.

It is seriously close to that now with LAOCOP operators pushing to drop Morse code. They cannot be bothered to study either and they have the numbers, too.

Are AOCOP holders soft? Do you sit back and blame the WIA? Just because you have your full call does not mean that these issues do not affect you any more. Unless you make your voice heard, through the WIA if necessary, you can expect anyone at all to literally buy your spectrum space.

If you cannot take the trouble to answer surveys, vote on issues, or help in some other way, then you do not deserve the title "ham". You may as well throw your equipment away and take up watching television.

There are many Silent Kays, better men than you, who you have to live up to now. Paying \$23 a year for a licence is not supporting your hobby, merely double that for the WIA membership alone, help, not only will you get the magazine, QSL bureau, repeaters, etc, you will get to vote.

\$40 a year is nothing these days, so, absolutely no arguments will be entered into.

Asah, what the heck. 73,

Gil Griffith VK3CG,
7 Church Street,
Bright, Vic. 3741.

Technical Correspondence

In reference to your *Equipment Review* article on p32 of the June issue of *Amateur Radio*, Emtron EAT-300A Antenna Tuner I would like to make the following comments.

1 The EAT-300A is electrically identical to the EAT-300. Although it is a new unit with new features, it does not supersede the EAT-300.

2 It is customary to rate all antenna tuners in PEP values instead of average and the reviewer should have been aware of it. There is a very good reason for this condition. Also the power rating is valid only when the tuner is correctly adjusted. A simple mathematical exercise shows that at a power level of 300 watts and a load range of 5 to over 2000 ohms a power level of less than 1000 volts appears across the terminals. The variable capacitors in our 300 series tuners are rated at 1000 volts, consequently when correctly adjusted they can easily handle their rated power and thus any transceiver on the market today.

3 There are two reasons for the use of a 200 watt FSD power meter in this tuner.

(a) since the meter does not indicate PEP but average power, there is no reason for a 300 watt meter.

(b) the second reason is practical. All Emtron cross needle meters are custom made, and the manufacturer only accepts orders of 500 units or more. It would be difficult to use a different meter for each Emtron product. The same meter is used in the EAT-300A, EAT 1000A, EAT-2000A, EP200 and some other equipment still on the drawing board.

4 The built in dummy load in the EAT-300A is rated 100 watts at 50 percent duty cycle for 300

watts at 20 percent duty cycle). Since all practical power measurements and tuning of older-type transceivers is done within a minute this has been set as a limit. This has nothing to do with the power rating of the tuner.

The dummy load is an additional useful feature but has nothing to do with the tuner and its power rating. The reviewer has confused these aspects.

5 Re the air-wound inductor over heating. Several tests have been conducted in our laboratory with a continuous power of 200 watts of 80 metres HF being applied for periods of 30 minutes. The inductor did warm up, which is only natural, but the temperature level assessed by touching it with a sensitive part of the hand was not unpleasant. These tests were performed on a balanced load with impedances ranging from 200 to 800 ohms. Therefore the claim is rejected. The 200 watts continuous power was generated with a transceiver driving a T1922 I near amplifier.

The reviewer is correct in suggesting that tuning with 125 watts caused capacitors to spark. But note that a precisely what every tuner manual no matter how poorly written, tries to prevent the user from doing. What the reviewer should have done, was to adjust the tuner first at low power as suggested in the manual and then apply full power.

6 Finally, criticism of the manual is fully justified. Too much has been taken for granted. These days when most amateurs are 'appliance operators', we at Emtron should have known and produced a more detailed operators' manual, presently in preparation.

Yours faithfully,

Rudi Branznik VK2AOT,
Emtron Industries.

I was very interested in Ron Fisher VK3OMs excellent review of the Emtron EAT-300A Antenna Tuner, as appeared on p32 of the June issue of *Amateur Radio*.

I agree with Ron that this is a very good unit, as I had purchased one a short while before publication of the article. Ron rightly comments that 'tuning on most of the bands was extremely critical'.

All tuners of this type are critical to tune, a movement of one degree makes a big difference on either capacitor.

Within the first couple of hours of operation of my unit, I had removed all the nice looking small knobs with the wide markings and replaced them with old pointed knobs from the 'junk box'.

These knobs are easier to manipulate and make it easier to locate a previous setting, after changing frequencies.

I commend this change to other users of a similar unit.

73,

Alan Doble VK3JMD,
206 Poath Road,
Hugdale, Vic. 3166

"RADIOVISTA" WANTED

An Italian speaking amateur willing to translate any interesting Italian articles so they may be reprinted in AR.

For further information please contact:
(Mrs) Ann McCurdy at the Federal Office.

Silent Keys

It is with deep regret we record the passing of —

MR & F POTTS
MR VAN DER VEN

VK2EX
VK3AZN

Obituaries

VERN EVERITT VK2LR

Vern was born at Marrickville, Sydney, on December 23, 1908. One of his great joys and life-long interests was his radio. Unfortunately, specific details of his early activities with radio are not available. However, his sister recalls that when he was about eight or 10 years of age, well before he went to high school, he made a crystal set for which he bought ear phones. As he had no form of amplification, he put the ear phones in his mother's mixing bowl and the volume and clarity of sound that resulted was amazing. Vern's daughter recalls being told that at about the same age, he used to carry a heavy car battery around to operate his radio.

The source of Vern's early interest in radio is not clear. It is thought that someone connected with the Boy Scouts or the Dulwich Hill Holy Trinity Anglican Church Boys Choir, to which he belonged, assisted him. Vern made several crystal sets for neighbours and friends. He later made several valve sets when he was in his early 20s. A boyhood friend recalls that the four valve radio made for him by Vern around 1929 operated well until after the war and was still operating well when it was replaced. When Vern was about 12 years old he subscribed to some early wireless magazine. Later in the 1930s and 40s he subscribed to *Wireless Weekly*.

In the 1920s, Vern was active in the Lakemba Radio Club. Recently, when the LR call sign became available Vern changed his call sign from VK2BQO to VK2LR, in memory of his early Lakemba Radio days.

Vern looked forward to the journal *Amateur Radio*. He particularly enjoyed the diagrams of circuits and board layouts, and was working on several of these up to his passing. As cataracts had resulted in his having very poor, almost negligible eyesight, this was surprising and gives some indication of his great love and interest in radio.

Vern's many radio friends will remember and miss his daily schads with his son, Kevin, and with them. Vern was active on the air right up to the day of his passing, having made contact with Kevin VK4BKE, that very morning.

Vern was a man who was "larger than life". He had a wide spectrum of interests and abilities. He had a keen and inquiring mind. He occasionally commented that there was not enough time to pursue all his interests. Professionally he was a lawyer. He had the distinction of being the youngest person admitted to the Bar. He had an outstanding career in the Crown Law Office and Public Works Department before his resignation to commence his own legal practice in 1949.

Vern was a brilliant musician and was proficient in playing the violin, clarinet, range of saxophones, piano and organ. While in his third year at Fort Street Boys High School, Sydney, (where his name is on the Academic Honour Roll) Vern formed a

four man jazz band. His band was engaged to play for school dances and other functions in the district. Music, particularly jazz, proved along with his radio, to be a lifelong interest for Vern.

Vern passed away suddenly from a heart attack on the evening of August 8, 1986.

He was a Christian gentleman, and left the world a better place. He was dearly loved, and is sadly missed by his wife Lorraine, children Shirley and Kevin (VK4BKE), eight grandchildren and nine great-grandchildren.

Vern's XYL, Lorraine Everitt

RAYMOND EDWARD JONES VK3RJ

The death on Friday, May 22, 1987, of Ray Jones VK3RJ, marked the loss of one of the best-known and respected members of amateur radio in VK and overseas, and also a friend we have known for many years.

Born in January 1900 at Maryborough, Victoria, as one of six children, Ray lost his father at a very young age. The family found the going extremely hard, but with Ray's assistance and support, were able to cope.

At the age of 14 years, Ray joined the Postmaster General's Department, as a Telegraph Messenger, at Maryborough. Four years later he enlisted in the Army, but did not see any overseas service because of the cessation of hostilities shortly afterwards.

After being discharged from the Army, he returned to the Post Office and was promoted to a Telegraphist at Central Telegraph Office, Melbourne. He continued in this position until the outbreak of World War II, in 1940, when he again enlisted and saw service as LAC and rose to the rank of Squadron Leader.

At the end of the war he resumed in his former position of a telegraphist at Melbourne and was subsequently promoted as Supervisor. He retired in 1960, when he and his wife, Lilian, travelled on an overseas trip to Europe and the USA. Here they met many amateurs with whom Ray had contact with since receiving his amateur licence in 1928, under the call sign VK3RJ.

With 59 years of activity under his original call sign, Ray was a wireless supporter of the Wireless Institute and managed the Inwards and Outwards Sections of the QSL Bureau for many years. He was rewarded with Life Membership of the Institute for his work in this area. He was a foundation member of the RAOTC and served on the committee in its early years of formation. He was also a member of the First Class Operators Club and many other clubs associated with DX and CW. The walls of his shack were covered with certificates and awards of all types which indicated his remarkable prowess in contest working, including DXCC.

Ray was an expert CW operator and his sending was a real pleasure to copy as the rhythm and clarity of his signals was outstanding.

Although in failing health for sometime, Ray maintained his interest in amateur radio almost to the day of his becoming a Silent Key.

Ray's wife pre-deceased him four years ago. He is survived by two daughters and four sons and their families, to whom we extend our sincere and deepest sympathy.

He will be greatly missed by all who knew him. Vale Ray.

Wall Mathers VK3MJ, Ivor Stafford VK3XB & Marie Stafford VK3KS

See also a tribute to Ray, this issue.

CAMPBELL (BANJO) PATTERSON

VK3JH

"Banjo" lived in Naracoorte, South Australia, 600 metres from my home, when I was just a baby. Our late fathers John

Patterson and Roy Crawford, were great friends.

Around the age of nine years, I walked into Banjo's shack and was astounded by the bank of accumulators — a crystal oscillator, Morse key feeding an "end-fed Zepp" with power out of four watts on the 7 MHz band.

Banjo's first entry in his log book was on May 5, 1933 when he contacted Jack Lester VK5LR. (Jack is now residing at Inman Valley and is still active at the age of 85 years.) On May 5, 1983, VK5LR and VK3RJ again made contact on 7 MHz with SSB to commemorate "50 years of amateur radio" for VK5XR.

Banjo was a keen rifle shooter and, despite having lost the sight of one eye at an early age, won many trophies on the rifle range. His brother, Murray, was one of the members of Jim Kelly's "Bullocky Drive" from Naracoorte to Port Adelaide.

After leaving Naracoorte, Banjo started a radio and electrical business at Peterborough, South Australia. At a later date he became manager of the Peterborough Power Station, a position he held until his retirement.

Banjo was 75 years of age when he passed away. I have many fond memories of the Patterson family and extend deep sympathy to his wife, Cecile and family.

Bill Crawford VK5XB



QSP

RADIO DETECTION EQUIPMENT — A NEW USE!

The Federal Department of Communications has recently helped the Police Department of New South Wales, track down some \$30 000 of stolen property, including transmitters, stolen from the State Rail Authority, which were used to direct trains.

A state-of-the-art Radio Detection Finder urgently recalled by DCC from Perth, was pressed into service on race pit, to trace the source of illegal transmissions, presumably from the stolen radios.

A spokesperson for the DCC said that with the information gained the police were able to a multi-taneously raid six premises and subsequently charge three people.

The spokesperson said that the stolen transmitters had apparently been illegally used to disrupt radio traffic on the train "working frequency", including an attempt to make a train run against a red stop light.

DCC officers had worked closely with state police and railway officers by using a recreation finders and other radio monitoring equipment in two vehicles which traced the source of the illegal transmissions giving evidence enabling the police to obtain search warrants and execute them in a dawn raid.

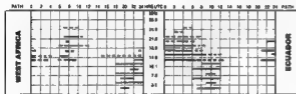
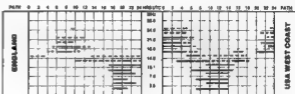
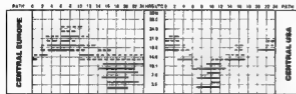
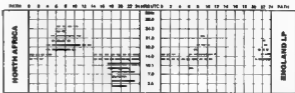
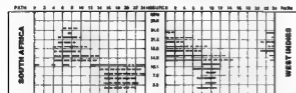
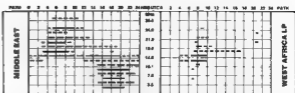
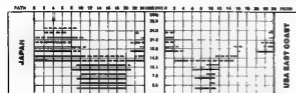
The operation was spearheaded by the NSW Tactical Response Group and included teams from the Dog Squad, Anti-Theft Squad, the State Railways Authority Investigation Branch and officers of the Sydney Regional Office of the DCC.

The spokesperson said it was the first time a search warrant had been obtained under the Radiocommunications Act 1983, where Department officers, instructed by the police, searched the premises for illegal transmitters and conducted records of interview which allowed charges under the Act to be made on-the-spot for suspected breaches. Previous to the proclamation of the Act, proceedings would have had to be carried out by summons.

From DCC Press Release Number 35/87 9th June 1987

Ionospheric Predictions

Len Poynter VK3BYE
14 Esther Court, Fawkner, Vic. 3060



LEGEND

From Western Australia (Perth)

From Eastern Australia (Cairns)

Mixed mode dependent on angle of radiation (long breaks lines)

LP = Long Path or Short Path

Less than 50% of the month when broken lines

Predictions are presented courtesy of the Department of Science, IPS Radio and Space Services, Sydney.

Solar Geophysical Summary

— APRIL 1987

Solution to Morseword 5

Across 1 cor 2 fear 3 mark 4 gale 5 Yemen 6 vast 7 doc 8 stems 9 notes 10 taps
Down 1 norm 2 iris 3 grew 4 log 5 1 day 6 cool 7 mangle 8 eases 9 mule 10 fetas

	1	2	3	4	5	6	7	8	9	10
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

Solar activity was mostly low in April with two M1 flares being reported on the 8th and 16th. Despite the low solar activity there were a number of reasonably sized regions visible on the solar disc after the 4th. At times these promised significant solar activity but little eventuated. These solar regions pushed the 10 cm solar flux up to levels not seen for a considerable period of time. They ranged from a low of 72 on the 2nd and 3rd up to a high of 105 on the 16th. This value was the highest observed on any day since June 1984. Most of these regions seen during the month were 'new cycle' regions. The high monthly averaged sunspot number (39.3) for this month

has caused the yearly smoothed value for October to be greater than the September figure. This raises the possibility that September 1986 is the date of the solar minimum. Sunspot monthly average for April 39.3 1987. Yearly average 9.86 12.4. A index average for April 7.4.

GEOMAGNETIC ACTIVITY

April was a very quiet month with just two days with A15 or over: H = A16, 7 = A15. — From data supplied by the Department of Science, IPS Radio and Space Services, April 1987.

This space is reserved for your business card.

DEADLINE

All copy for inclusion in the October 1987 issue of *Amateur Radio*, including regular columns and Hamads, must arrive at PO Box 300, Caulfield South, Vic. 3162, at the latest, by 9 am, August 20, 1987.

Hamads

PLEASE NOTE: If you are advertising items FOR SALE and WANTED please write each on a separate sheet of paper and include all details: eg Name, Address, Telephone Number on both sheets. Please write copy for your Hamad as clearly as possible. Please do not use scraps of paper.

- Please remember your STD code with telephone numbers.
- Eight lines free to all W.A. members \$9.00 per 10 words minimum for non-members.
- Copy typeset in block letters — double-spaced to Box 300, Caulfield South, Vic. 3162.
- Repeats may be charged at full rates.
- If QTH means address is correct as set out in the WIA current Ca. Book.

Ordinary Hamads submitted from members who are deemed to be in the general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being resold for merchandising purposes.

Conditions for commercial advertising are as follows \$22.50 for four lines, plus \$2.00 per line (or part thereof).

Minimum charge — \$22.50 pre-payable.
Copy is required by the Deadline as indicated on page 1 of each issue.

TRADE ADS

AMIDON FERROMAGNETIC CORES. Large range for all receiver and Transmitting Applications. For data and price list send 10¢ x 220 mm GASE to RU & W IMPORTERS, Box 157 Mortdale NSW 2223 (No inquiries at office). 11 Macven Street Oakley Agencies at Geoff Wood Electronics, Lane Cove NSW Webb Electronics, Albany NSW Tascott Electronics, Croydon Vic Willis Trading Co Perth WA Electronic Components, Fishwick, Plaza ACT

WANTED — NSW

CW FILTER YG-339SC to suit Kenwood TS-520S. Ken VK4YRL QTH Ph: (086) 24 2433 (BH) or (066) 24 3197 (AH).

WANTED — VIC

GALAXY 5 HF TRANSCEIVER: Ext VFO + MC. Must be At 1 Also TS-820 or similar. Also TR-7200 clean/mobility or similar. All band HF ant tuner 14 A/VQ vert ant or similar. Jack VK3JB, QTH Ph: (03) 49 2973

PHOTOGRAPH OF CIRCUIT BOARD. of Marconi VHF/UHF signal generator TR1064. Wanted known if anyone has a video machine which plays Sanyo tape VT20G & is able to do. For copying to tape transfer. VK3YH, QTH Ph: (03) 49 2973

POWER SUPPLY: or circuit diagram for Geosco unit 4104 comprising a 100V/230 mA, a 300V/60 mA, 65V/9.2 mA, 5.0V/1.4 A & 3.0V/750 mA. Please state condition & price to Marneuf VK3DQ, QTH Ph: (03) 420 7385/329 (BH)

ROTATOR: suitable for 6 element beam in good condition. F3SWL, QTH Ph: (03) 741 7554 (AH).

WANTED — QLD

CIRCUIT DIAGRAM: for Yaesu FRC-7 will pay costs. VK4NPK, Ph: (075) 53 2832.

KENWOOD PS-20 (PS-30) POWER SUPPLY: or locom equivalent. VGC Ph: (075) 84 5201

RF SIGNAL GENERATOR: to 500 MHz. AM & FM by VK4ADY, QTH Ph: (071) 86 4492

WANTED FOR GYMPE AMATEUR RADIO CLUB MEETING. Amateur commercial domestic military & homebrew radio & electronic gear. Alan VK4BWC, QTH Ph: (071) 83 1127

WANTED — SA

SANWA "SEEC" T1200 2 METRE FM TRANSCEIVER (model AS) operating manual & physical therapy. Markrose VK5OD, QTH Ph: (08) 339 2329

WANTED — TAS

FTV-107R: Harry VK7HH, QTH Ph: (003) 56 1578

FOR SALE — ACT

ICOM IC-20AT HAND-HELD VHF TRANSCEIVER: HIMS speaker mic, BPF3 nicad BC25SE charger \$375. Werner Wulff dual band 1015.5100 Hustler off VLF altitud varied 960. Buyer collects. VK1BZ, Ph: (062) 80 1254

FOR SALE — NSW

ALINCO 2 LINEAR AMP: New, never used, 10-30, 5W, class 2B9, XDS best offer. Loo VK2OB, QTH Ph: (049) 43 3392

DECEASED ESTATE. TS520DGS, Info-tech M-300C, Info-tech M-200E. See VK2 Mini-Bulletin notes for tender details.

FT-107P TRANSCEIVER & FT-107P POWER SUPPLY SPEAKER: 900 TR-7400A 2 metre mobile transceiver with heavy duty power supply \$300. Bud lowpass filter \$40. Samsa CX505 50 voltin per volt multimeter \$50. Drake WA wattmeter \$50. S&W antenna switch \$30. Ocratt SWR & power meter \$20. Geoff Ph: (02) 489 4318

ICOM 720A: dual VFO & general coverage receiver \$750. Yaesu FT-707 power supply \$250. Frank Ph: (03) 328 2398 (BH) or (02) 621 4149 (AH).

YAESU FT-707 TRANSCEIVER: FT-707 power supply, FC-707 antenna tuner, FV-707DM Hustler off VLF altitud varied 960. Vertical antenna. Will sell as one lot only. Offers to David Ph: (02) 29 1768 (BH) or (02) 496 2259 (AH).

FOR SALE — VIC

2CB9A 10V/6HF TRANSMITTING TUBES. New \$30 ea. 2m converter FET VK3AFQ design \$40. RTTY gear \$4K. TS880 colour computer, MFJ-1229 digital RTTY & CW, data cassette recorder \$500 the lot. Brand New Tektronics 5" display unit ideal for RTTY monitor scope. \$100. Dick VK3AHT, QTH Ph: (03) 874 4967

COLLINS 51S-1 COMMUNICATIONS RX: As new \$560. Kenwood digital display DG-5 as new \$120. Ph: (052) 48 1410 after 7 pm.

ICOM 2M TRANSCEIVER: IC-22A. Repeaters 3, 4 & 8 Channel 37, 40, 50 & 51 VGC with manual. \$150. Andrew VK3BJW Ph: (03) 678 8593

ROTATOR: Emotator model 502SAX. New & unused in carton \$500. Dummy load 100W 1.4V to 30 MHz. MFJ (USA) Model Verano 2500. \$50 ea. VK3AMQ, QTH Ph: (03) 570 4610 or Ed VK3CM, QTH Ph: (03) 578 7745

SIGNAL GENERATOR: F995 BS 200 kHz to 220 MHz. CHTFMAM variable deviation. Output 1 V/10 to 100 mV in 1 dB steps. Very stable, in condition as new. Full set of spares, complete operating and service manuals. All leads & termination unit. Calibrated for 50 ohm output \$550. OMIC. Ph: (03) 509 0845 9 am to 9 pm.

SOUTHERN STAR POWER SUPPLIES: 2 only. 240V in, 13.8V DC out, 4A peak, 1.5A continuous. Suit units up to 20W. Perf cond \$45 each. Machine for Kenwood 130S transceiver. Perf cond \$35. A&R transformer PR1V 180/250V. VA 1000 50, See V115, See 8 in 8. Enclosed W handle \$100. Ex cond. Ph: (055) 62 6016

TOWER: Rolly radio tower. 13.7m. Extensible. Rated 40 MP5 wind velocity. In perfect condition. \$680. Ph: (03) 569 5378 after 4 pm.

FOR SALE — QLD

DIGITAL FREQUENCY METER: 7 digits, frequency & period, 2EA. 100 B100/62 50 MHz with 500 kHz precision & 100 pF mod. Assembled. Alfronsa kits, all

instructions. At 1/2 new price, posted anywhere in VK for \$102. VK4ADY, QTH Ph: (071) 86 4482

DRAKE C-LINE (R4C & T4XC): Full coverage capability receiver & amateur bands transmitter. Very reliable rig in good condition, with many features found on more modern sets, including twin VFOs, notch filter manuals, etc. Spare lines included \$550. Wanted IC-20A or similar compact mobile rig in top condition. Deane to John VK4BZ, QTH Ph: (070) 61 5298

DRAKE TR-7 HF TRANSCEIVER: All solid state. Instruction manual, service manual & extender boards, plus original power supply VK4KIC, QTH Ph: (071) 284 7738

TWO ELECTRONIC MORSE KEYS: Recently homebrewed, RF protected, attractive metal case. Both have cathode & grid wiring. Lock on/off & work well. One tested on air. Speed about 5-40 WPM. One has red/green LEDs to indicate cathode or grid keying. Separate paddle or lambo key needed with both. \$110 for one, \$205 for the other. Ron Johnson VK4F1J, QTH Ph: (079) 6532 Yegoon

FL21002 LINEAR: 1 mW cond. \$750. plus freight. Steve VK4KH, QTH Ph: (077) 43 4508 (BH), (077) 44 3100 (AH)

ICOM INTERNAL PS-35: 20A supply for 781 etc. Lilla used, warranty still \$300. Home-brew V4 BA rig PS. GC. \$35. HF linear 61456, 1W-100+V Compact and PS. We made \$190. Yaesu 9 MHz xtal filters 1x3SB, 1x2W \$20 ea. VK4A, Z, QTH Ph: (031) 5528, (07) 227 7224 (BH)

YAESU YQ-100 MONITORSCOPE: never new & had no \$200.00. Yaesu FT-2100B, brand never used. Less value, best offer over \$220. Unit was checked over by Mitchell Radio & is in good condition. Eric VK4NJC, QTH Ph: (071) 887 7255

FOR SALE — SA

CB RADIO CIRCUIT GLADIATOR: Converted to 10 metre band (28 MHz). Includes 1 power supply for base operation. 1 grade for mobile, 1 Dick Smith frequency counter, 1 antenna & base for the mobile 10 metre band. All perfect condition. Also D Smith antenna matcher. Sell at \$250 the lot. Freight not included. Ph: (087) 25 7715 all hours

FOR SALE — WA

YAESU FT-101Z TCVR: Very good condition. One owner. Complete with WARC bands & microphones. \$400. ONO Ross VK8VM, Ph: (08) 398 6139

FOR SALE — TAS

YAESU FT-880 TCVR: as new inc gen cov rct, power amplifier, service manual, box inc. Cost new approx \$3900. Sell for \$1900 inc mic, ONO VK7AN, QTH Ph: (003) 31 7914

SWAP — QLD

HAVE ZL1H CONVERTER: works well to swap for 12 metre FLH rig or sell for \$200. Gordon VK4AM, 12 Gordon Lane, Mt Morgan Qld 4714

Advertiser's Index

ACME ELECTRONICS	41
AUSTRALIAN ELECTRONICS MONTHLY	35
A J & J COMAN	29
CHIRSIDE ANTENNAS	34
DICK SMITH ELECTRONICS	1FC
ELECTRONICS TODAY INTERNATIONAL	29 & 41
EMFONICS	18C
GRAFX PREDICTIONS	57
IAN J TRUSCOTT'S ELECTRONIC WORLD	50
ICOM AUSTRALIA PTY LTD	BC
INSTITUTION OF DIAGNOSTIC ENGINEERS	55
KENWOOD ELECTRONICS AUSTRALIA PTY LTD	4
QD ELECTRONICS	18
TEGA ELECTRONICS PTY LTD	47
WIA MAGFUBS	16
WIA (NSW DIVISION) NOVICE LICENCE	18
WILLIAM WILLIS & CO PTY LTD	29



SYDNEY — MELBOURNE — BRISBANE



EMTRON'S MODULAR ANTENNA TOWERS

NEW

Ideal for ground or roof mounts.

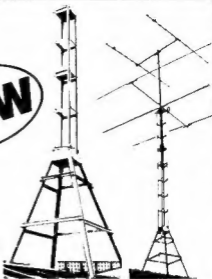
Modular, portable, extremely rugged.

- One man assembly and installation • Lightweight
- High quality aluminium alloy • High stability

Finally here are strong, sturdy antenna towers that are simple to assemble, lightweight, strong and can be used on your roof-top or packed up and used in the field. Available in three modules, 3.8m (11'), 5.5m (18') and 7.5 (25'). The 11' foot model has three and one tower module; the 18 foot has two tower modules; and the 25 foot model contains three tower modules.

MODEL ET-1 Base plus 1 tower section, and hardware \$497

MODEL ET-2 Tower section only \$190



NEW 1KW EMTRON TUNER EAT-1000A Only \$499



NEW 300W EMTRON TUNER EAT-300A Only \$349



OVER 1000 FAMOUS EAT-300 SOLD



This new EAT 1000A is EMTRON'S latest antenna tuner built on special request by many amateurs. Built with best components available, 5 position internal antenna switch, cross needle SWR/power meter, built-in 3:1 balun for open loading and antenna terminals for coax line, open baluns as well as towers. EAT 1000A will tune almost everything from 1.8 to 30 MHz. At lowest price professional design and quality that EMTRON provides. MADE IN AUST.

The finest 300 watt antenna tuner on the market with quality that only EMTRON can provide! Unique features such as:

- Cross needle SWR & reverse power meter - built-in 100 watt dummy load - Antenna switch including bypass - Built-in 1:4 balun for open loading - Lowest price & professional design - Matches everything from 1.8-30 MHz - Made in Australia by Emtron

EMTRON'S latest selling 300 watt antenna tuner with SWR meter, built-in 1:4 balun, heavy duty ceramic switch and top grade components. Works with all rigs and is found in Amateur, Commercial and Marine services.

Only \$239

FOR SWL EMTRON DESIGNED ETP-1



Antenna Tuner & Low Noise Amplifier For Receivers!

ETP-1 will match your antenna to your receiver for maximum signal from MW to SW. It utilizes a low noise 12dB gain preamplifier to boost weak signals. Special spring loaded load line terminals as well as SO239 connectors make ETP-1 the most versatile tuner/amplifier on the market.

ONLY \$159 & \$10 P&P

EMTRON'S PRECISION CROSS NEEDLE RF EP200 SWR METER



Yes this new from EMTRON - highly accurate CROSS-NEEDLE SWR & POWER meter, model EP-200 with a freq range from 1.8 MHz to 60 MHz and two power ranges 20, 200 watts, gives instantaneous readings of forward/reverse power and SWR.

ONLY \$99 + \$10 POST

NEW from EMTRON



Professionally made noise bridge for all kinds of RF measurements antenna adj etc

NOISE BRIDGE with EXPANDER EBN-2 \$129 & \$10 P&P

EMTRON'S NEW HF SWR METER EP-1



Specially designed with PRICE, QUALITY AND ECONOMY IN MIND. Freq range from 3.50 MHz. Reads forward and reflected relative power. Ideally suited for amateur and CB services.

\$49 & \$5 P&P

NEW from EMTRON EAA230 active antenna a SWL delight

Specially designed for SWL. Based on the famous "DRESSLER DESIGN", the unique electronic circuitry gives to receiver a perfect impedance match from 100kHz to 30MHz. A 12 dB low noise pre-amplifier gives weak signals a boost comes complete with 240V AC 12V DC supply and 10M of coax.

\$259

& \$15 DEL.

**CORRESPONDENCE:
BOX K21,
HAYMARKET, NSW.
2000**



EMTRONICS

**MAIL ORDERS
WELCOME**

NSW & HEAD OFFICE:

92-94 Wentworth Ave, Sydney
NSW. 2000. TLX:AA739390
P.O. Box K21 Haymarket, NSW. 2000.

Ph: (02) 211 0988
FAX: (02) 281 1508

VICTORIA:

288-294 Queen St. Melbourne
Vic. 3000.
Entrance from Lt. Lonsdale St.)

Ph: (03) 670 8551 or 670 0330
FAX: (03) 670 0671

QUEENSLAND:

416 Logan Road, Stones Corner
Old. 4120. TLX:144696

Ph: (07) 394 2555
FAX: (07) 39 4316

The first multi-band transceiver that'll impress everyone except car thieves.

The new ICOM IC-900A is a totally new modular concept in multi-band amateur radio transceivers.

First, it's designed to fit into the stylish, compact instrument panels of modern cars rather than the glove box. Secondly the modular concept makes theft less attractive.

You see, what makes this concept so impressive is that the main and most expensive components of the radio can be secured and hidden away in the boot.

Its technology is equally impressive.

The IC-900A is the first known to use optical fibre technology in an amateur transceiver. It uses optical fibre cable as a link from the two interface units. One for the remote controller and the other for the band units.

This provides an accurate display of frequency and memory data for any data for any two bands in use.

The IC-900A has a multi-band independent receive and transmit capability. So, it can monitor and use each installed band simultaneously, giving

the effect of multiple transceivers.

The transceiver has 10 programmable memory channels in each band unit; up to 60 memories all together. Tuning can be selected in 5 KHz, 10 KHz, 15 KHz, 20 KHz and 25 KHz steps. Options include either the UT-28 Digital Code Squelch (DCS) unit or UT-29 Tone Squelch Unit.

The UX-19 band unit covers 28-30 MHz with 10/1 watt selectable output. The UX-59A covers 50-54 MHz at 10/1 watts. The UX-29A covers 144-148 MHz at 25/5 watts (a UX-29H version offers 45/5 watts). The UX-49A covers 430-440 MHz at 25/5 watts. And the UX-129A covers 1240-1300 MHz.

If you find all this impressive, you'll be most pleased to read that the IC-900A handbook is excellent and simple to follow. Especially on installation procedure.

Perhaps the best thing to do is to visit your ICOM dealer and see how more impressive the IC-900A is in the flesh.

For details of your local dealer phone ICOM on Melbourne (03) 529 7582 or (008) 33 8915 from elsewhere in Australia.



ICOM



NOVICES ON THE TWO METRE BAND

A Review of the History and the Issues

by Ron Henderson and Peter Gamble

FOUNDED 1910

Ever since the introduction of the Novice Licence in 1977 there has been a desire for a "common" band so that all amateurs could communicate with each other. This was first raised at the 1977 Federal Convention. However, it was concluded at that time that there was insufficient support for a common band.

At successive conventions motions were raised with the intent of finding a common band for all licencees. As an example, at the 1982 Convention, VK6 proposed without success that novices be allowed to use approved, channelised, low power FM equipment on the seventy centimetre band. There was concern that this might also lead to "type approved" equipment which is contrary to WIA policy and indeed the reason for the existence of amateur radio. Coupled with this, there have been other attempts to extend existing novice sub-bands and privileges. None of these proposals received sufficient support at the various conventions to be passed. Nevertheless, there was a great deal of interest and discussion on these issues.

Insert in Aug A.R. 1987.

At the 1982 Convention, a policy statement on novices was produced which stated that the Novice Licence was considered to be an "entrance grade". This was reviewed at the 1986 Convention, where a further motion recommending that there be no extension to novice privileges at this stage was passed.

The 1986 Federal Convention also took a different approach. A motion was proposed which extended the novice privileges to the six metre band. Rather than decide on this matter in isolation, it was referred to a newly formed committee - one charged with looking at the future of amateur radio. The fact that this proposal for novice use of six metres was referred to this committee was considered to be an expression of support for the idea. However, there was some difficulty in getting this committee off the ground during 1986/87 and so no report on this matter came to the 1987 Convention.

At the 1987 Federal Convention, the VK3 Division sought to separate the novice use of six metres from the greater issue of the future of amateur radio and achieve a decision in isolation. At the same Convention, the VK3 Division proposed a novice allocation on a small two metre band segment for CW and SSB use only. These matters were debated at length. Separation of the novice use of six metres from the future of amateur radio was lost on the vote (4 to 2) but the debate disclosed very strong support amongst all divisions for a common band for all classes of licence holders.

Coupled with the knowledge that the Department of Communications intended to authorise a reciprocal agreement with Japan, which would permit their telephony licence holders (a grade technically lower than our novice) to operate on VHF and UHF bands using ten watts and telephony mode, the Council saw merit in seeking two metre privileges for the Australian Novice.

Whilst the initial VK3 proposal was for a band segment for CW and SSB only, the Council conceded that true common band operations could only be achieved by the inclusion of the FM mode. The extra privileges proposed were qualified in that the existing novice power levels and emissions were to be retained with the addition of FM voice. This motion was carried almost unanimously, with the VK1 Division

dissenting only on the choice of band.

There was no intention of making the Novice Theory exam paper harder by the inclusion of FM or VHF techniques, for the Federal Council has given clear directions that there is to be no lower grade than the Novice (1976) and the Novice exam level is to be restored to its early standard.

In debating the matter, the Council was mindful of the gap between novice and full licencees and sought to achieve greater unity. Instances were cited of novice operators being formally constrained from actively participating in WICEN, divisional broadcasts, club stations and other similar activities. There was also a desire to be innovative rather than reactive, and not wishing to be criticised yet again for slow deliberations. Finally, there was the hope that this would raise the visibility and involvement of novices in amateur radio activities and end any possible discrimination.

The mood of the Council, as expressed in the motion, was to take immediate action. Consequently a request, based on the motion passed, was delivered to the DOC on the following Monday. It was adjudged the feeling of the council this apparent unearned gain by the novice was highly desirable to lift flagging interest and declining growth in amateur radio as a hobby. Subsequently this matter was discussed at a joint DOC / WIA meeting in Canberra on 19th May 1987. At this meeting the Manager, Regulatory Operations Branch, Mr David Hunt, advised that the DOC had received a number of direct submissions both supporting and decrying the request. He further advised that the DOC would seek additional information from the WIA in support of its submission. This request has since been confirmed in writing.

The Federal Executive, at its May 1987 meeting resolved:

"That in the light of comments received from the amateur community, and with recent discussions with DOC, the issue of extended novice privileges in the two metre band be referred to the Committee for the Future of Amateur Radio; that this committee be asked to produce a number of discussion papers coupled with a general review of licensing grades and operating privileges existing in the amateur service."

The Future of Amateur Radio Working Party is now active and is preparing a series of five papers which address various issues, including the broader issues relating examination requirements and morse code proficiency to operating privileges. The comments made by many amateurs on this and other related issues have been forwarded to this Working Party.

We hope that this report has brought you up to date on the issues relating to the "Novices on Two Metres" proposal. Further, the papers prepared by the FARWP will be circulated to the Federal Councillors (and thus to the Divisions) for comment and input on the issues raised therein.

For the Federal Executive,
Ron Henderson, VK1RH and Peter Gamble, VK3YRP.
19th July 1987.